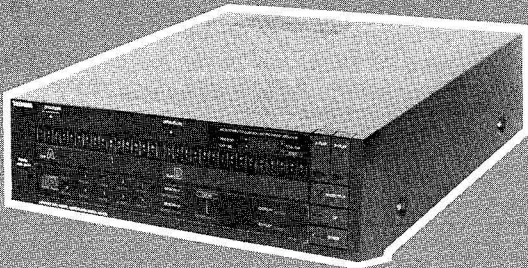


TOSHIBA

COMPACT DISC DIGITAL AUDIO PLAYER

XR-V22



SPECIFICATIONS

Type:	Compact Disc player with optical pickup	Pickup:	Semiconductor laser type
Quantization:	16 bit linear	Track location:	By track
Channels:	2 (Stereo)	Power supply:	220V ~, 50 Hz for Europe 240V ~, 50 Hz for United Kingdom 120V ~, 60 Hz (TA, TC) 110-127/220-240V ~, 50/60 Hz (VF)
Frequency response:	5 Hz – 20 kHz ± 0.5 dB	Power consumption:	22 watts
Dynamic range:	Over 96 dB	Dimensions:	340(W) x 109(H) x 362(D) mm
Total harmonic distortion:	0.003% (1 kHz)	Weight:	6.2 kg
Channel separation:	Over 90 dB		
Wow and flutter:	Unmeasurable		
output:	2.0 volts		

Specifications are subject to change without notice.

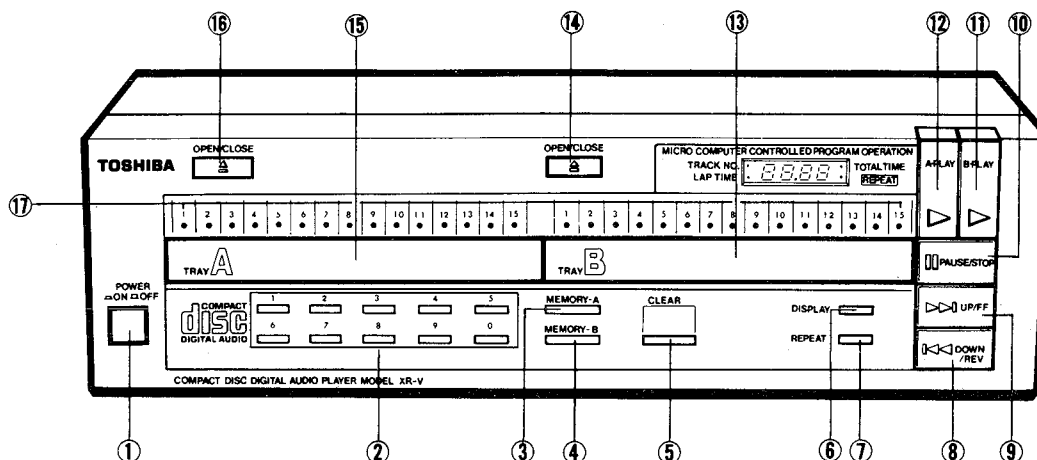
TA, TC, TE, TU, VF
PRINTED IN JAPAN 22905432 June, 1985 ©

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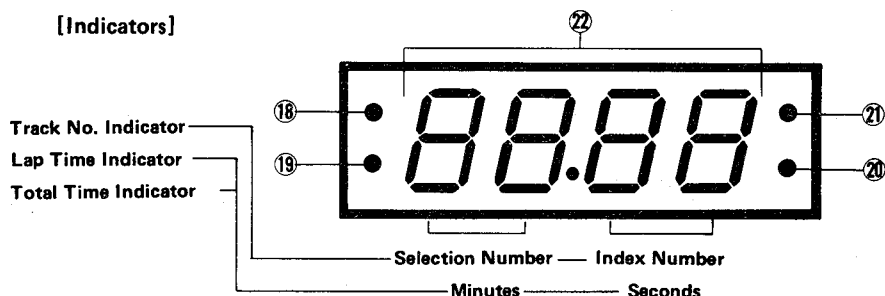
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CAUTION: Before returning the unit to the customer, check that the resistance between both blades of AC plug and any accessible metal parts is more than $3M\Omega$ after completion of servicing, using the circuit tester.
(TA Model only)

1. NAMES AND FUNCTIONS OF PARTS

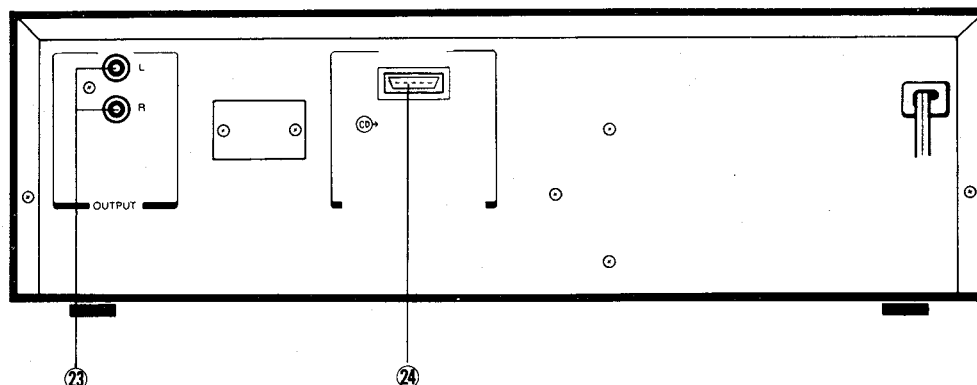


[Indicators]



[Front Panel]

- ① **Power Switch (POWER)**
Press once to turn the power on, and once again to turn it off.
- ② **Selection Keys (1 ~ 0)**
Use these keys for direct track access or for selection of tracks to be stored in memory.
- ③ **A-Memory Key (MEMORY-A)**
Press to store a track number in the TRAY A memory. A simultaneous press of this key and the CLEAR key cancels all items in the TRAY A memory.
- ④ **B-Memory Key (MEMORY-B)**
Press to store a track number in the TRAY B memory. A simultaneous press of this key and the CLEAR key cancels all items in the TRAY B memory.
- ⑤ **Clear Key (CLEAR)**
Press this key together with the MEMORY key to cancel the memory. It also cancels track numbers input through the selection keys before they are entered into memory.
- ⑥ **Display Key (DISPLAY)**
Each press of this key changes the display as follows:
(1) TRACK NO Displays the track and index numbers being played.
(2) LAP TIME Displays the elapsed playing time.
(3) TOTAL TIME Displays the total playing time.
Note: Total time shown includes fast forward, fast reverse and skip play operation.
- ⑦ **Repeat Key (REPEAT)**
Press to repeat play.
- ⑧ **Down Key (DOWN)**
Press to decrease the track number. A press of this key while pressing the PLAY key allows Fast Reverse playing.
- ⑨ **Up Key (UP)**
Press to advance the track number. A press of this key while pressing the PLAY key allows Fast Forward playing.
- ⑩ **Pause/Stop Key (PAUSE/STOP)**
Press to temporarily interrupt disc playing. Press it again to stop Play (display returns to 00.00).
- ⑪ **B-Play Key (B-PLAY)**
Press to begin playing the disc in the TRAY B.
- ⑫ **A-Play Key (A-PLAY)**
Press to begin playing the disc in the TRAY A.
- ⑬ **Disc Tray B (TRAY B)**
- ⑭ **Open/Close Key (OPEN/CLOSE) for TRAY B**
Press to open or close TRAY B. Opening and closing of TRAY B is possible while the disc in the TRAY A is playing.
- ⑮ **Disc Tray A (TRAY A)**
- ⑯ **Open/Close Key (OPEN/CLOSE) for TRAY A**
Press to open or close TRAY A. Opening and closing of TRAY A is possible while the disc in the TRAY B is playing.
- ⑰ **Programme Indicator**
The indicator displays the playing and memory conditions. During play, the indicator corresponding to the track being played flashes on and off. For tracks after the 15th track, the indicator for the 15th track flashes on and off. In the pause mode, the indicator flashes quickly. The indicator lights continuously when a track has been memorized.



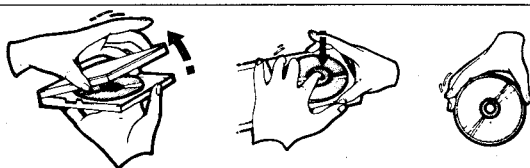
[Indicators]

- ⑮ **Track No. Indicator (TRACK NO.)**
Light up for track No. display.
- ⑯ **Lap Time Indicator (LAP TIME)**
Lights up during elapsed time display.
- ⑰ **Repeat Indicator (REPEAT)**
Lights up when Repeat Play is ON.
- ⑱ **Total Time Indicator (TOTAL TIME)**
Lights up for total time display. Pressing the PAUSE/STOP key twice returns the display to 00.00.
- ⑳ **Time Counter/Multi Display**
Displays TRAC NO., LAP TIME and TOTAL TIME individually as modes are changed.

[Rear Panel]

- ⑲ **Output Jacks (OUTPUT)**
Connect these to the CD/AUX or AUX jacks of your integrated amplifier using the included PIN cables.
- ⑳ **Synchronous Jacks (SYNCHRO. OUT)**
As shipped, a short connector is attached. When the CD player is used with the Toshiba SK-V11 cassette receiver, connect these jacks to the SK-V11 using the included special cable. Refer to page 3 for details.

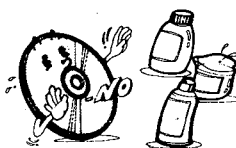
Please be careful not to damage the discs while handling them.



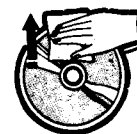
- Hold discs as shown in the illustration being careful to keep fingerprints off the disc surface.

Handling of Discs

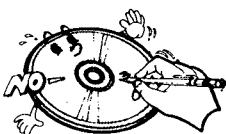
- Do not wipe with alcohol (particularly methyl alcohol), water, ordinary phonograph record cleaners or static electricity prevention solutions.



- To remove fingerprints or dust from the disc surface, wipe with a soft cotton cloth from the center to the outer edge.



- Do not write on the label side of the disc.



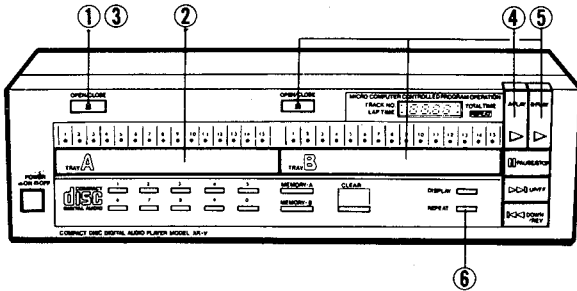
- **Storage**
To avoid disc warpage, store in a place free of high heat and humidity. Direct sunlight for extended periods will damage the discs. Store discs in their original jackets.

2. TO PLAY A DISC : Manual Play

There are two types of manual (normal) Play: Single Play plays each disc in the same way conventional CD players do. Double Play plays the two discs in TRAY A and B one after the other.

■ Single Play

(A) Play disc in the TRAY A



- ① Press the OPEN/CLOSE key to open TRAY A.
- ② Place a disc in the tray with the label side facing up.
- ③ Press the OPEN/CLOSE key again to close the disc tray.
- ④ Press the A-PLAY key.
- * The programme indicator for the initial track flashes on and off, and Play begins at that track.

- Even if the tray is open, a press of the A-PLAY key closes it automatically and begins Play from the first track.
- A press of the DISPLAY key during Play changes the display from TRACK NO. to LAP TIME. Another press changes it to TOTAL TIME.
- When the final track has been played, the CD player goes into the Stop mode (Play stops and the display returns to 00.00).

(B) Play disc in the TRAY B

- ⑤ Following the instructions as for the TRAY A, place a disc in TRAY B and press the B-PLAY key.

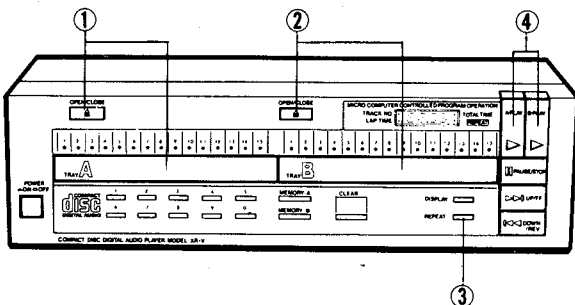
(C) Repeat Single Play

- ⑥ During Single Play, a press of the REPEAT key lights up the Repeat indicator, and the mode switches to Repeat On. Play repeats from the beginning to the end of the disc.
- For Repeat Single Play, place only one disc in either the TRAY A or B.

Note: On the first cycle of Repeat Play it sometimes takes a bit longer than normal to return to the first track.

- ⑦ Pressing the REPEAT key a second time releases Repeat Play, and the Repeat indicator goes off.

■ Double Play



- ① As in Single Play, place a disc in TRAY A and close the tray.
- ② Place a second disc in TRAY B and close the tray.
- ③ Press the REPEAT key to set the player in the Repeat On mode.
- ④ Press the PLAY key for the tray you want to play first.

- A press of the A-PLAY key starts Play from TRAY A, and a press of the B-PLAY key starts from TRAY B. Continuous Double Play begins.
- During Double Play, the discs in TRAY A and B are played continuously, alternating from one to the other.

Note: If the player is not set in the Repeat On mode, the player automatically goes into the Single Play mode.

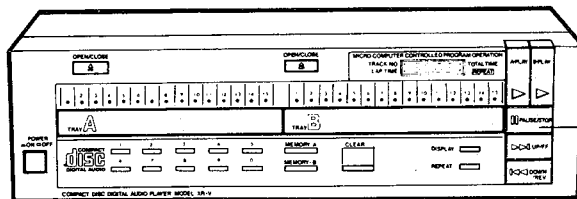
- ⑤ To cancel Double Play, press the REPEAT key (the Repeat indicator goes off), or remove the disc which is not being played.

■ Other Means of Playing Discs

☆ Repeat Play with More than Two Discs

While one disc is being played in the Repeat On and Double Play modes, replace the disc not being played with another. In this way several discs can be played without interruption.

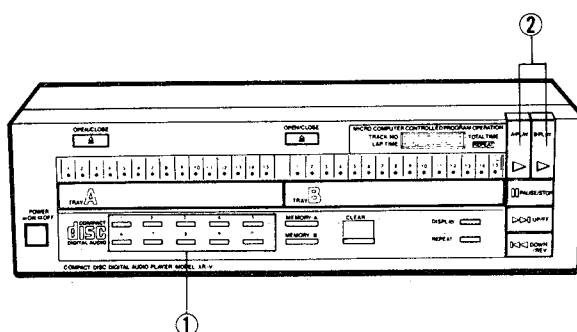
■ To Interrupt Play



- ① To temporarily stop Play, press the PAUSE/STOP key once.
 - The programme indicator corresponding to the track which was being played flashes on and off quickly, and the pickup stops at the point where Play was interrupted. To resume Play, press the PLAY key that corresponds to the disc tray which was Paused.
- ② To stop Play, press the PAUSE/STOP key twice (in the Pause mode, press only once). Disc Play stops.

■ To Select a Specific Track

☆ Direct Selection



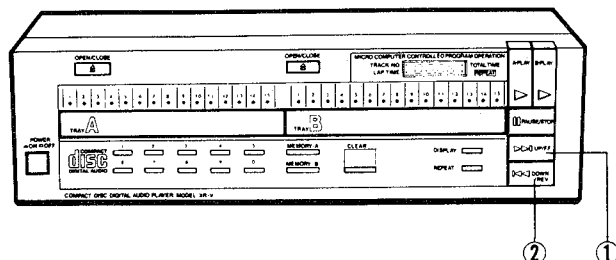
- ① Choose the desired track number using the selection keys.
- ② Press the PLAY key for the desired disc tray.
 - A press of the A-PLAY key starts Play at the specified track on TRAY A, while a press of the B-PLAY key starts Play at the selected track on TRAY B. Play continues from that point.
 - If the disc tray is open, direct selection closes the disc tray automatically and begins Play at the selected track.

☆ Skip Play

Choose the desired track by pressing the UP or DOWN key.

If a track is selected during Play of another track, Play switches to the beginning of the selected track.

In the Pause mode, the pickup moves to the beginning of the selected track and enters the Pause mode at that point.



- ① A press of the UP key advances to the next track number. Pressing the UP key when the final track is being played moves the pickup to the beginning of the first track. In Double Play, the pickup moves to the beginning of the first track of the second disc.
- ② A press of the DOWN key moves the pickup to the beginning of the track being played. Another press moves it the previous track.

- If the display shows LAP TIME or TOTAL TIME, it automatically switches to TRACK NO., and upon completion of searching the selected track, it returns to the previous mode.

☆ Fast Forward/Fast Reverse

- For Fast Forward, press the UP key while pressing the corresponding PLAY key (A-PLAY or B-PLAY).

When the pickup has advanced to the final track:

- In Single Play, the player goes into the Stop mode.
- In Repeat Play of the Single Play mode, the pickup returns to the first track and continues Fast Forward.
- In Double Play, the pickup moves to the first track of the second disc and begins Fast Forward.
- For Fast Reverse, press the DOWN key while pressing the PLAY key of the corresponding tray.
 - If the display is showing TRACK NO., it changes automatically to LAP TIME. Releasing the key resumes the previous display mode.

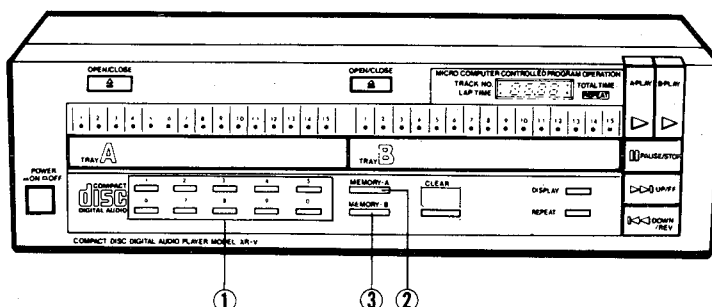
Note: Press the PLAY key before pressing the UP or DOWN key. Pressing the UP or DOWN key first will enter the Skip Play mode.

3. TO PLAY A DISC : To Program the Memory

Using the memory, you can play just the desired tracks of one or both discs.

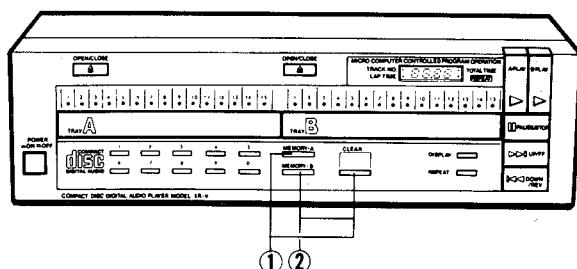
■ To Program the Memory

(A) To program the TRAY A memory



- ① Select the desired track number by pressing the select keys.
 - ② Press the MEMORY key. The Program Indicator lights and the selected track is memorized.
 - Up to 15 tracks per disc can be memorized.
 - If a selection key is pressed incorrectly, press the CLEAR key to cancel it, then select the correct track. If ten seconds elapses after a track has been selected, but the MEMORY key is not pressed, the selected track number will be cancelled automatically.
 - (B) **To program the TRAY B memory**
 - ③ In the same manner as for TRAY A, press the selection keys, then press the MEMORY-B key.
- Note:** The memory cannot be utilized under the following conditions:
- When the display is flashing on and off (when track selection has been made).
 - When there is no disc in a closed tray (Memory is cancelled).

■ To Cancel the Memory



(A) To cancel the TRAY A memory

- ① While pressing the MEMORY-A key, press the CLEAR key.
 - The Program Indicator light goes off and all items in the TRAY A memory are cancelled.

(B) To cancel the TRAY B memory

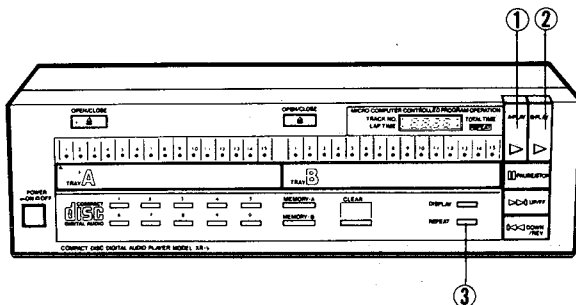
- ② While pressing the MEMORY-B key, press the CLEAR key.

- Opening the tray by pressing the OPEN/CLOSE key or turning the power off, cancels the memory.
- Tracks in memory can be cancelled one at a time for the disc being played by selecting the memorized track number then pressing the CLEAR key.

4. TO PLAY A DISC : Memory Play

■ Single Memory Play

(A) To play disc in TRAY A:



After programming the memory for TRAY A,

① Press the A-PLAY key.

Play begins with the smallest track number memorized, and the corresponding Program Indicator flashes on and off.

- If a track is stored in memory while one is being played in Manual Play, Memory Play can be entered when the track being played is finished, upon a single press of the UP key, or two presses of the DOWN key.
- When all memorized tracks have been played, the player goes into the Stop mode.

(B) To play disc in TRAY B:

After programming the memory for TRAY B, do the following:

② Press the B-PLAY key.

Memory play starts on TRAY B.

(C) Repeat Play of memorized tracks in the Single Play mode:

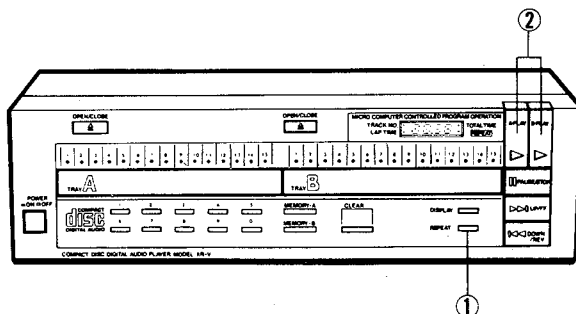
- ③ A press of REPEAT key enters the Repeat ON mode, and only the tracks in memory are played repeatedly.

■ Other Means of Playing Discs

☆ Repeat Play of one track only

Place a disc in either TRAY A or B. Program a track into the memory and set Repeat On (Repeat Play of memorized tracks in the Single Play mode). Then press the PLAY key. The memorized track will be repeatedly played.

■ Double Play Memory Play



After programming the TRAY A and B memories, or either one, do the following:

① Press the REPEAT key to enter the Repeat On mode.

② Press the PLAY key for the desired tray.

- A press of the PLAY-A key starts Play with TRAY A, and pressing PLAY-B starts Play with TRAY B. The player enters the Double Play Memory Play mode.
- Memorized tracks on a side for which tracks have been stored in memory and all tracks on a side for which no tracks have been stored are played repeatedly one disc after the other.

■ Selection of Track During Memory Play

(1) Direct selection

- When a memorized track is directly selected, Memory Play begins at that track (Direct selection of a track not in the memory cannot be made).

(2) Skip Play

- A press of the UP key advances through the tracks in memory in the memory order. A press of the DOWN key reverses the tracks in the memory order.
- During Double Play Memory Play, when the final memorized track of one disc is played, a press of the UP key advances the pickup to the beginning of the first memorized track of the opposite disc.

(3) Fast Forward/Fast Reverse

- In the Fast Forward mode, when the final memorized track is passed, the pickup moves to the beginning of the first memorized track and Fast Forward begins again at that point.
- During Double Play, when the final track is passed, the pickup moves to the first memorized track of the opposite disc, and Fast Forward begins again at that point.
- Fast Reverse is possible within the track that is being played.

■ To Cancel Memory Play

While pressing MEMORY-A or MEMORY-B key, press the CLEAR key to cancel the memory. The Program Indicator light corresponding to the memory goes off, and the memory play of each disc tray is cancelled.

- If the memory is cancelled during Play, all tracks on the disc from the one being played to the final track will be played.

5. ONE-TOUCH OPERATION, ABOUT SYNCHRONOUS RECORDING

By connecting the CD player to the SK-V11 cassette receiver, the following operations are possible. Refer to the owner's manual included with the SK-V11.

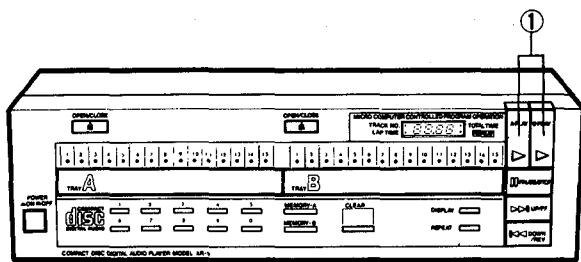
[One-Touch Operation]

By pressing only the PLAY key on the CD player, the SK-V11 input automatically switches to CD/AUX.

[Synchronous Recording]

The recording capabilities of the cassette receiver can be synchronized to the start, finish and pause of the CD player.

■ How to Perform One-Touch Operation



① After connecting to the SK-V11 cassette receiver, press the CD player PLAY key.

- The cassette receiver function automatically changes to CD/AUX. Changing the cassette receiver function during CD Play switches the CD player into the Pause mode. To resume Play, press the PLAY key.

■ How to Make Synchronous Recordings

Before attempting synchronous recording, check to assure that the CD player TOTAL TIME mode is set at 00.00. Whenever the CD player is in the Stop mode, the TOTAL TIME returns to 00.00. After this preparation, operate in the following order:

- ① When recording to tape with the CD player in Memory Play, store the desired track in the memory.
 - ② Insert a cassette tape in Deck B of the SK-V11 and press the SYNCHRO REC button. The SK-V11 goes into the SYNCHRO Recording Stand-by mode.
 - ③ Pressing the CD player PLAY key begins Play and, at the same time, recording onto the cassette tape begins. Pressing the DISPLAY key in the TOTAL TIME mode, shows the recording time.
- During recording, when the CD player finishes, the SK-V11 automatically leaves a four-second blank space on the tape then goes into the Pause mode.
 - When selection of a track on the disc requires more than four seconds, the SK-V11 still provides a four-second blank space.
 - During recording, pressing the CD player PAUSE/STOP key once puts the CD player, SK-V11 and TOTAL TIME into the Pause Mode. To resume, press the CD player PLAY key.
 - The TOTAL TIME returns to 00.00 after it passes 99 min. 59 sec.

Note: When the CD player is used alone and with the attached plug out, TOTAL TIME is not displayed.

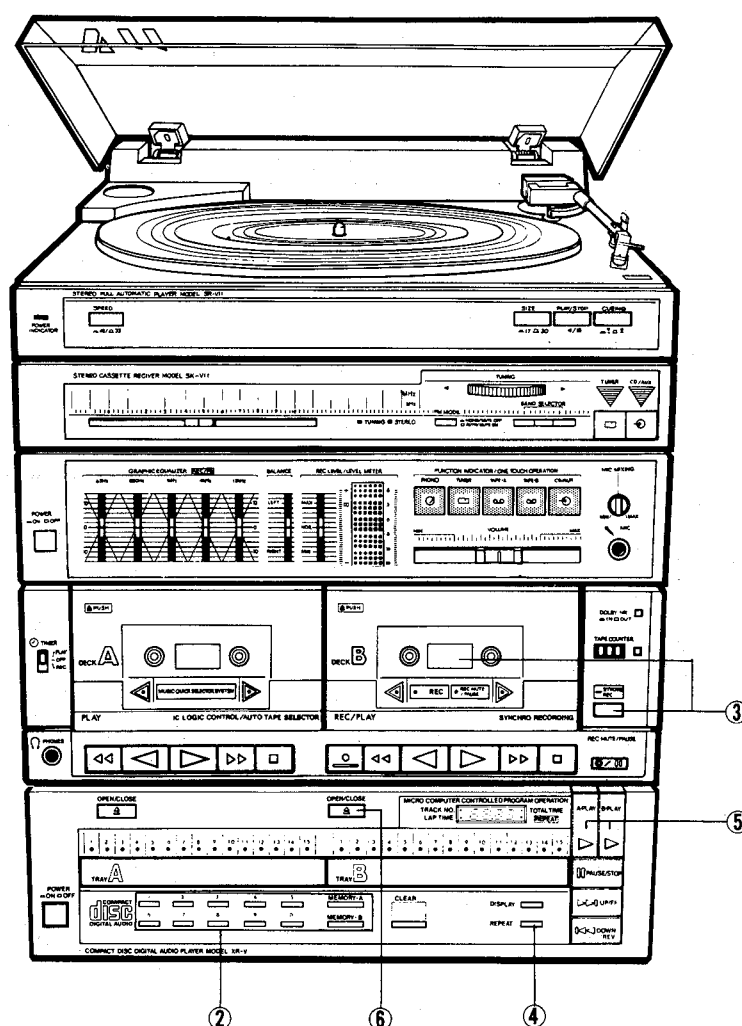
- The total time is displayed only in the synchronous recording mode.

■ **Create a Tape with Your Favorite Selections Through Synchronous Recording**

Thanks to Synchronous Recording, you can make tapes with your favorite hits in the following way: Collect several of your favorite compact discs, and

- ① Place the disc to be played first in one of the disc trays and close the tray.
- ② Select your favorite tracks, and store them in the memory for the tray in which the disc is placed.
- ③ Set the CD player into the Repeat Play mode by pressing the REPEAT key.
- ④ Insert a cassette tape into the SK-V11 and press the SYNCHRO REC button.
- ⑤ Press the CD player PLAY key. At the same time that play starts, recording also starts.
- ⑥ While recording from the first disc, set a second disc in the opposite disc tray and program the track numbers of your favorite selections. Close the tray.
- ⑦ When the final memorized track from the first disc is played, recording will automatically continue with the second disc. By replacing the first disc while the second disc is playing, you can record from several discs alternately to make a collection of only your favorites.

Note: Due to copyright laws, you may not copy copyrighted materials from radio broadcasts, discs, tapes or compact discs without permission of the copyright holder, except for personal enjoyment.



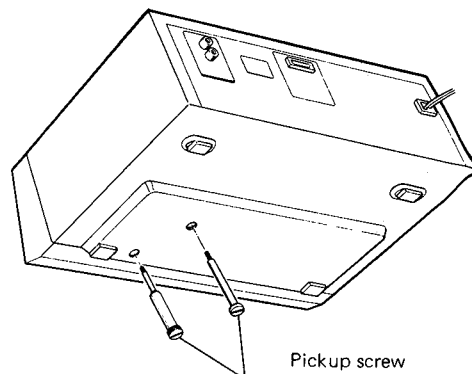
6. BEFORE USING THIS EQUIPMENT

■ The Pickup Attachment Screw

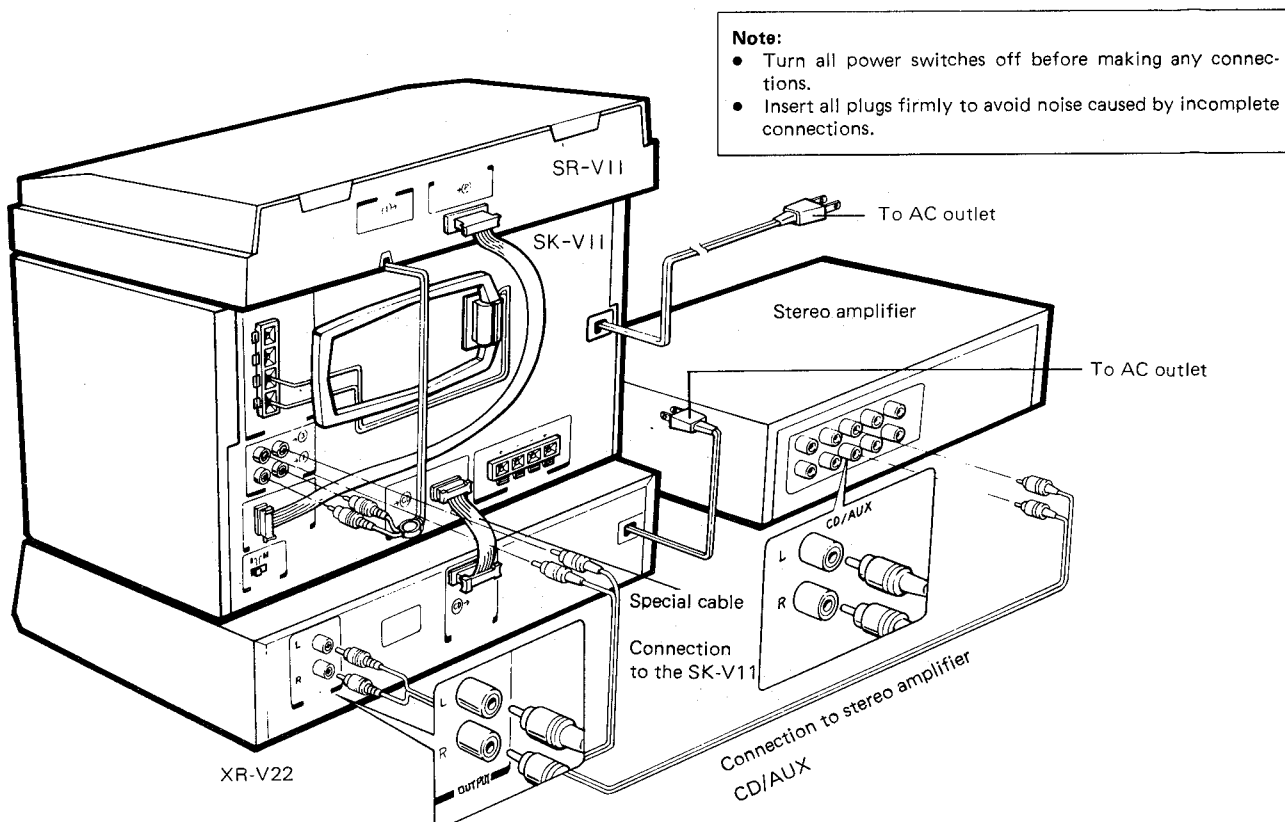
There is a pickup shipping screw on the bottom of the cabinet. Before playing a disc for the first time, this screw must be removed using a blade (—) screwdriver or coin. If the power is turned ON with this screw attached, the unit will not operate properly.

For future player transport save the pickup screw after it has been removed from the player.

Note: To transport, remove all discs from the trays and close TRAY A by pressing OPEN/CLOSE key. Then press the OPEN/CLOSE key for TRAY B. Next, press the B PLAY key. After the tray closes and the display goes off, disconnect the power source and insert the two pickup packing screws by turning clockwise.



7. CONNECTIONS



■ Connection to Cassette Receiver Unit SK-V11

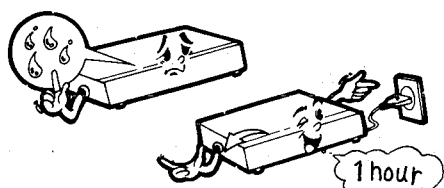
Using the connection cables included (US PIN cables), connect the OUTPUT jacks on the rear panel of the player to the CD/AUX input jacks of the SK-V11, being sure to correctly match the L and R channels. Also connect the CD player control jacks using the special included cable.

■ Connection to the Stereo Amplifier

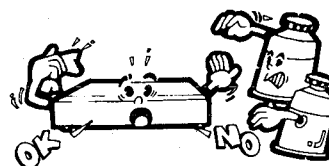
Using the connection cables included, (US PIN cables), connect the OUTPUT jacks on the rear panel of the player to the CD/AUX input jacks of the amplifier, being sure the correctly match the L and R channels.

8. POINTS TO REMEMBER

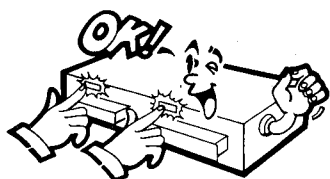
- If the player is brought from a cold environment to a warm one or is in a cold room that is quickly heated, dew may form on the pickup preventing proper operation. In this case, leave the power ON for about one hour to remove the dew.



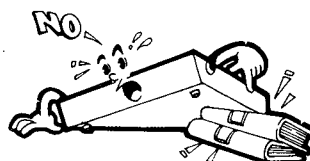
- To clean, wipe the cabinet with a soft, dry cloth. Dampen the cloth with water to remove stubborn stains. Never use benzine, thinners, alcohol or other chemical solvents since they may discolor the cabinet and remove lettering. Protect the cabinet from insecticides, hair sprays, paint and other substances that could cause stains.



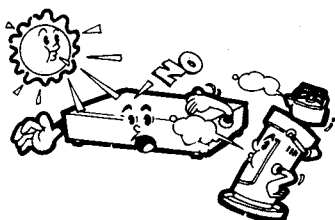
- Always close the disc tray when not loading or unloading discs to prevent delicate internal parts from dust.



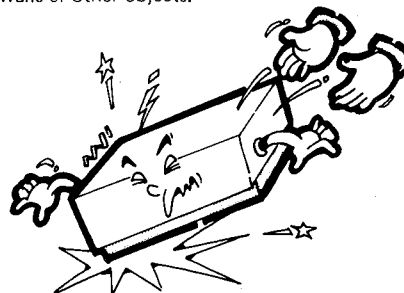
- Do not use the player in a slanted or perpendicular position. It should only be operated in a horizontal position.



- Do not expose the player to direct sunlight or heating units as the player's internal temperature may rise and shorten the life of the pickup.



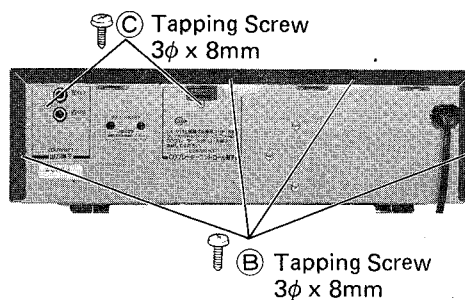
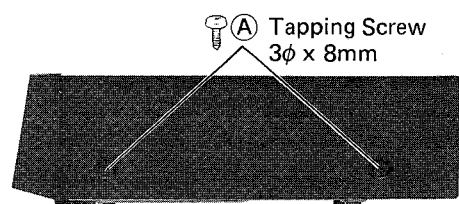
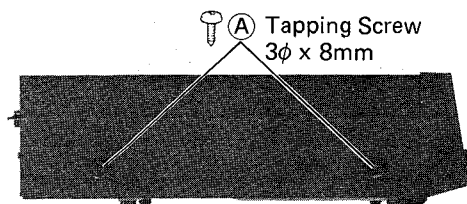
- When transporting the player, be careful not to bump it into walls or other objects.



9. DISASSEMBLY INSTRUCTIONS

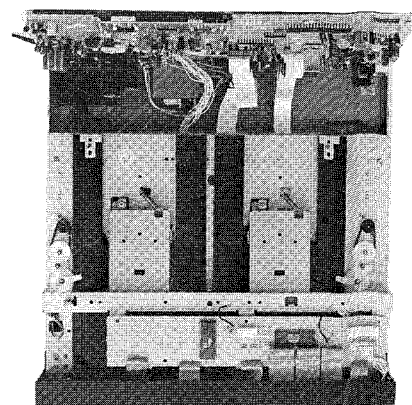
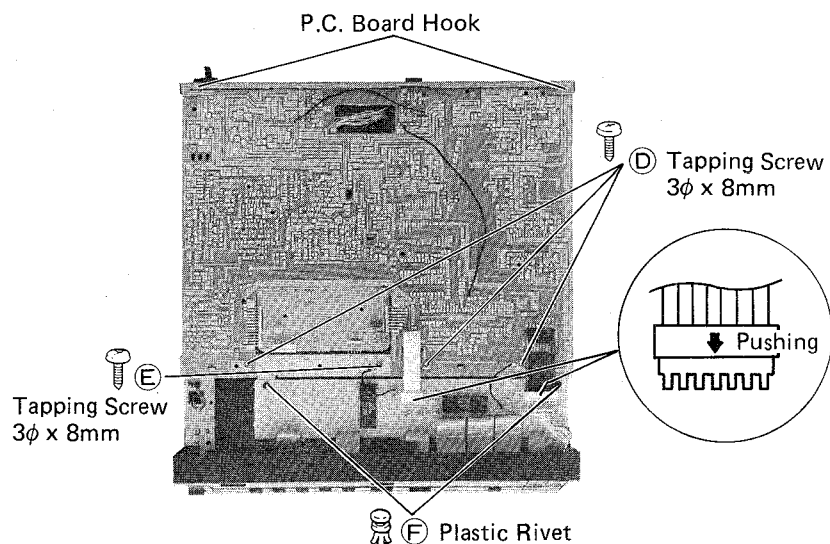
TOP COVER REMOVAL

1. Remove four screws (A) ($3\phi \times 8\text{mm}$) from both sides.
(Photos 1 and 2)
2. Remove four screws (B) ($3\phi \times 8\text{mm}$) from back side,
and the Top Cover will be removed. (Photo 3)



MAIN P.C. BOARD REMOVAL

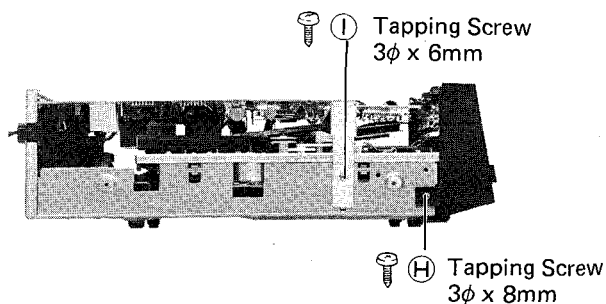
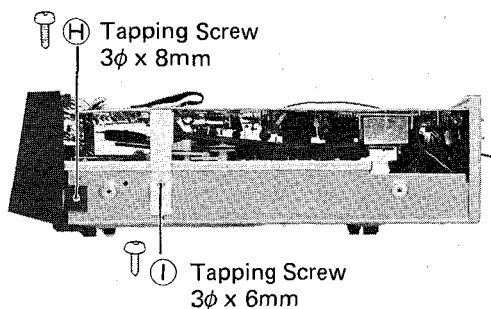
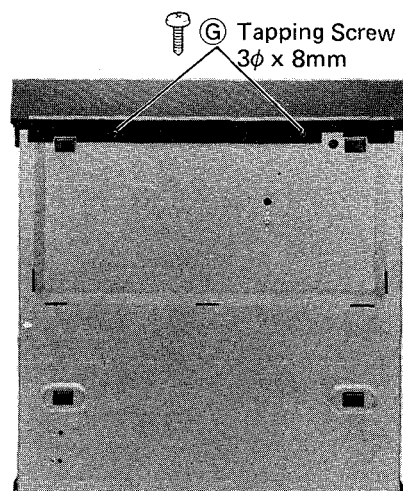
1. Remove two screws (C) ($3\phi \times 8\text{mm}$) securing output terminal and CD player control terminal of back panel. (Photo 3)
2. Remove 6P and 10P cords connected to display P.C. Board while pushing insertion surface of the connector.
3. Remove three screws (D) ($3\phi \times 8\text{mm}$) securing Main P.C. Board, and the Main P.C. Board will be removed.



P.C. Board lifted up

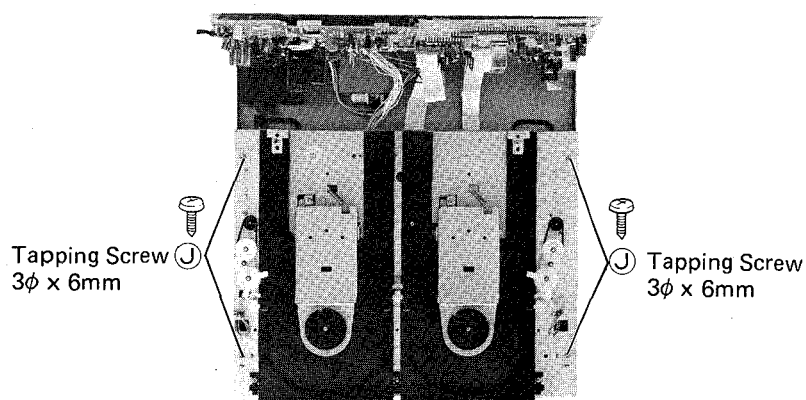
FRONT PANEL ASSEMBLY REMOVAL

1. Remove one screw ⑤ ($3\phi \times 8\text{mm}$) fixing ground lead terminal. (Photo 4)
2. Remove two plastic rivets ⑥ securing display P.C. Board. (Photo 4)
3. Remove two screws ⑦ ($3\phi \times 8\text{mm}$) securing Front Panel from bottom side. (Photo 6)
4. Remove two screws ⑧ ($3\phi \times 8\text{mm}$) from both sides, and the Front Panel Assembly will be removed. (Photos 7 and 8)

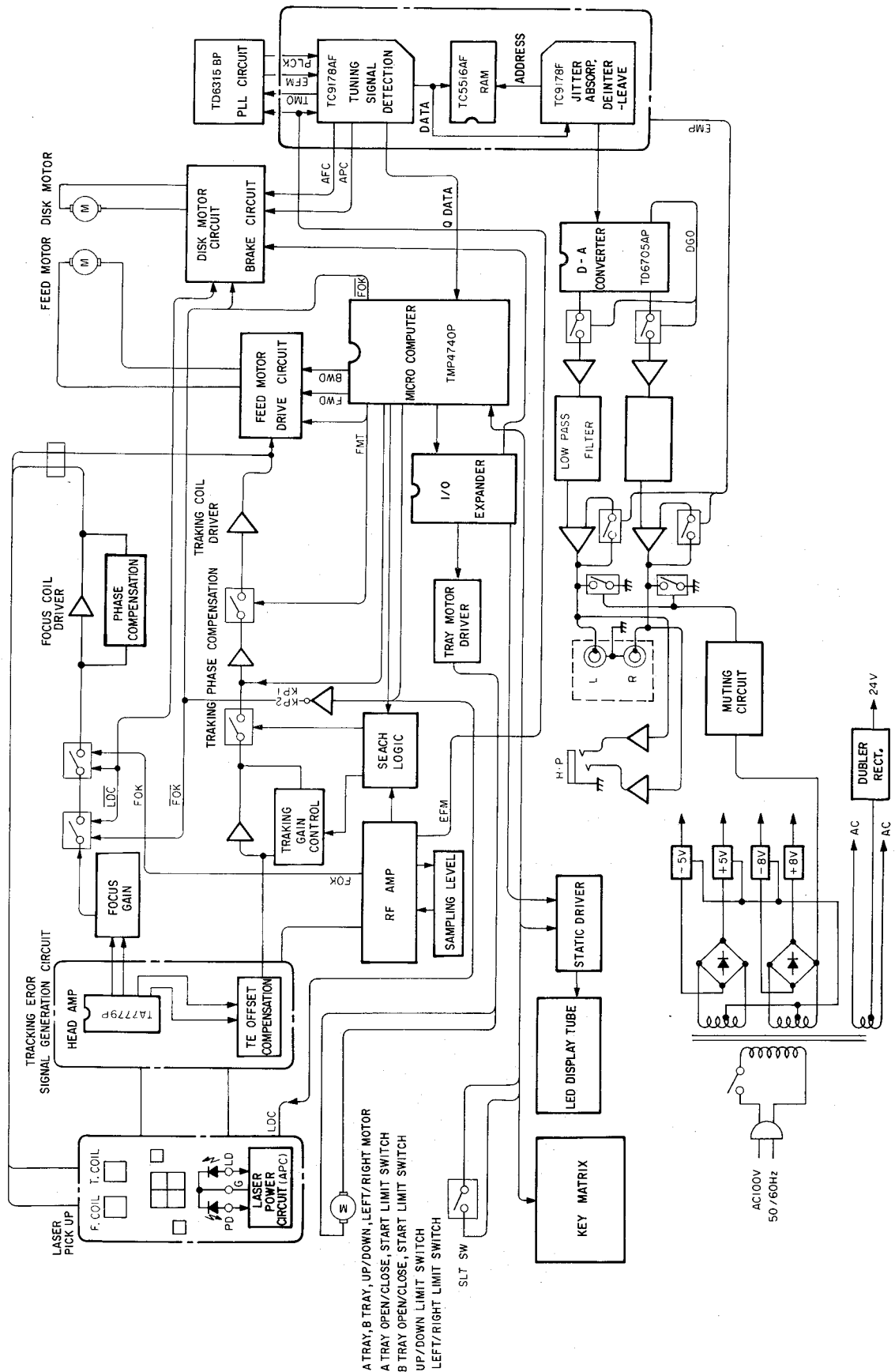


MECHA ASSEMBLY REMOVAL

1. Remove two screws ⑪ ($3\phi \times 6\text{mm}$) securing reinforcement metal fitting for main P.C. Board, and the reinforcement metal fitting will be removed. (Photos 7 and 8)
2. Remove four screws ⑫ ($3\phi \times 6\text{mm}$) securing Main Chassis. (Photo 9)



10. BLOCK DIAGRAM



11. CAUTIONS ON LASER PICK-UP REPLACEMENT

LASER PICK-UP REPLACEMENT PROCEDURE

Cautions on laser pick-up removal.

1. When removing the laser pick-up, solder and short-circuit the terminals to which red and black leads have been connected to protect the laser pick-up from damage which may be caused during the removal. (Refer to Figure A and B)
2. Disconnect the connector and leads after completion of soldering. Do not touch the terminals on the pick-up by your hand.
3. When mounting the laser pick-up, first connect the connector and leads before unsoldering the solder, used to short-circuit.

Cautions on laser pick-up replacement

1. When mounting a new laser pick-up, first connect the connector and leads and then remove laser diode protection shorting pin on P.C. Board.
 - * Use a soldering iron grounded (or leakageless iron).
 - * Cover the working bench with a conductive mat which is also grounded.
 - * Before proceeding job, always touch the conductive mat or ground lead with your both hands to discharge electric charges developed on your body.
 - * The necessary distance between laser pick-up and the viewers eye is only 2mm.

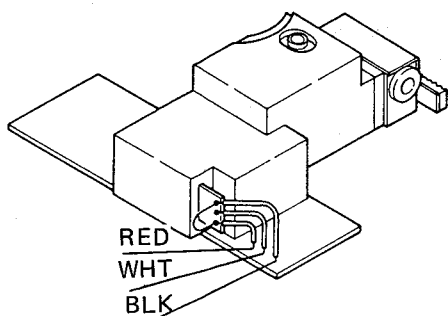


Figure A

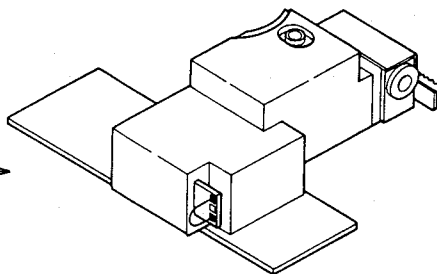


Figure B

- Solder or short-circuit the two terminals before disconnecting the connector leads.

- The terminals short-circuited.

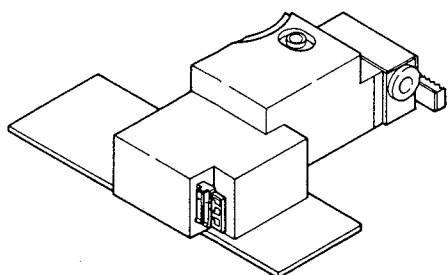


Figure C

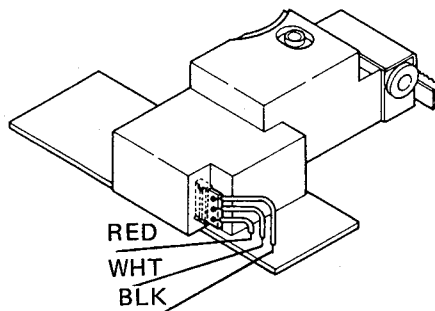


Figure D

- Laser diode protection shorting pin

- Remove laser diode protection shorting pin after connection of connector and leads have been completed.

- The pick-ups are divided into two rank groups, A and B, and one of ranks is indicated on a label put on a side of the pick-up as shown in Figure E. When a new pick-up having the same rank as one of the pick-up to be replaced is replaced, no additional resistor replacement is required. However, when the pick-up has a different rank, one resistor must be changed as tabulated below, depending on the rank of the pick-up to be replaced.

Laser Pickup Rank Indication

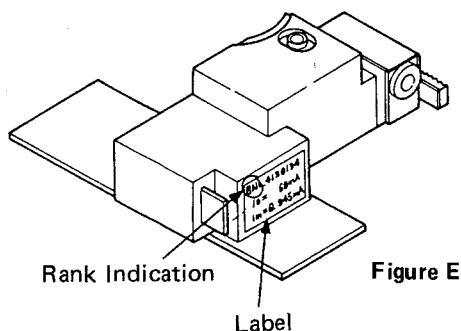
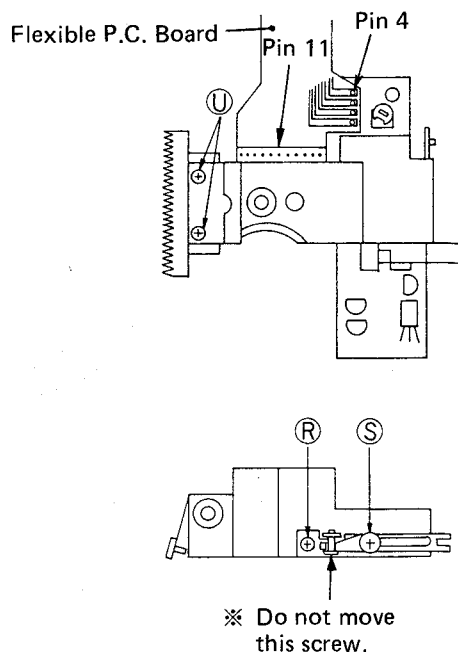
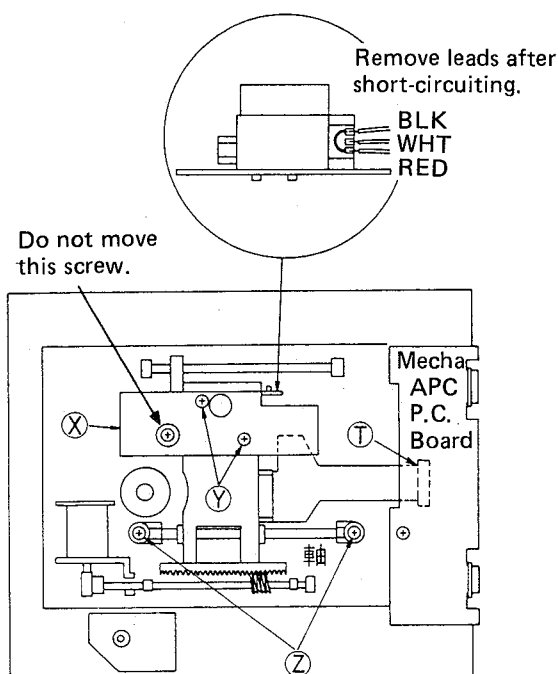


Figure E

Rank	Symbol No.	R113
A		Open
B		5.6K ohm

Laser Pickup Replacement

1. Remove flexible P.C. Board from connector ① of mecha APC P.C. Board.
 2. Remove two screws ②, and the laser pick-up and mecha P.C. Board will be removed. (Remove shaft as well.)
 3. Unsolder pin 11 and pin 4 of laser pick-up flexible P.C. Board and the flexible P.C. Board will be removed.
 4. Short-circuit laser pick-up's two terminals to which red and black leads have been connected.
 5. Remove two screws ⑤, and the mecha P.C. Board ④ will be removed.
 6. Remove two screws ⑥, and lack spring will be removed.
 7. Remove two screws ⑦ and ⑧, and the guide lever assembly will be removed. (Do not move spring and screw supplied with guide lever.)
 8. The laser pick-up will replaced in this way.
- To reassemble, proceed reverse steps 1 to 7 above.



12. ADJUSTMENTS

Preliminary Work Before Adjustment

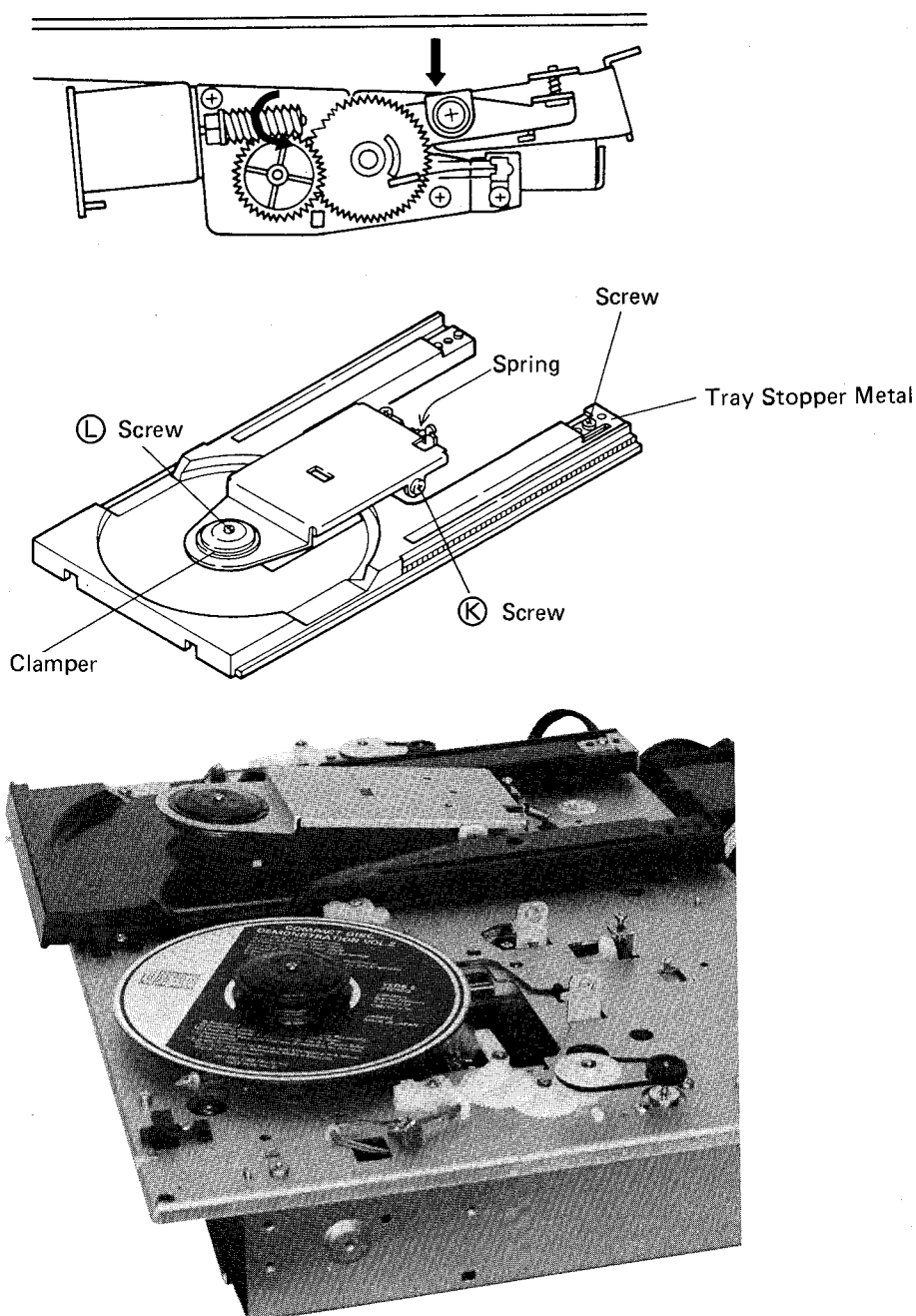
1. Remove main P.C. Board and front apnel. Connect mian P.C. Board and front panel's P.C. Board.
2. Remove disc tray to access R112, 10K ohm for laser power adjustment.

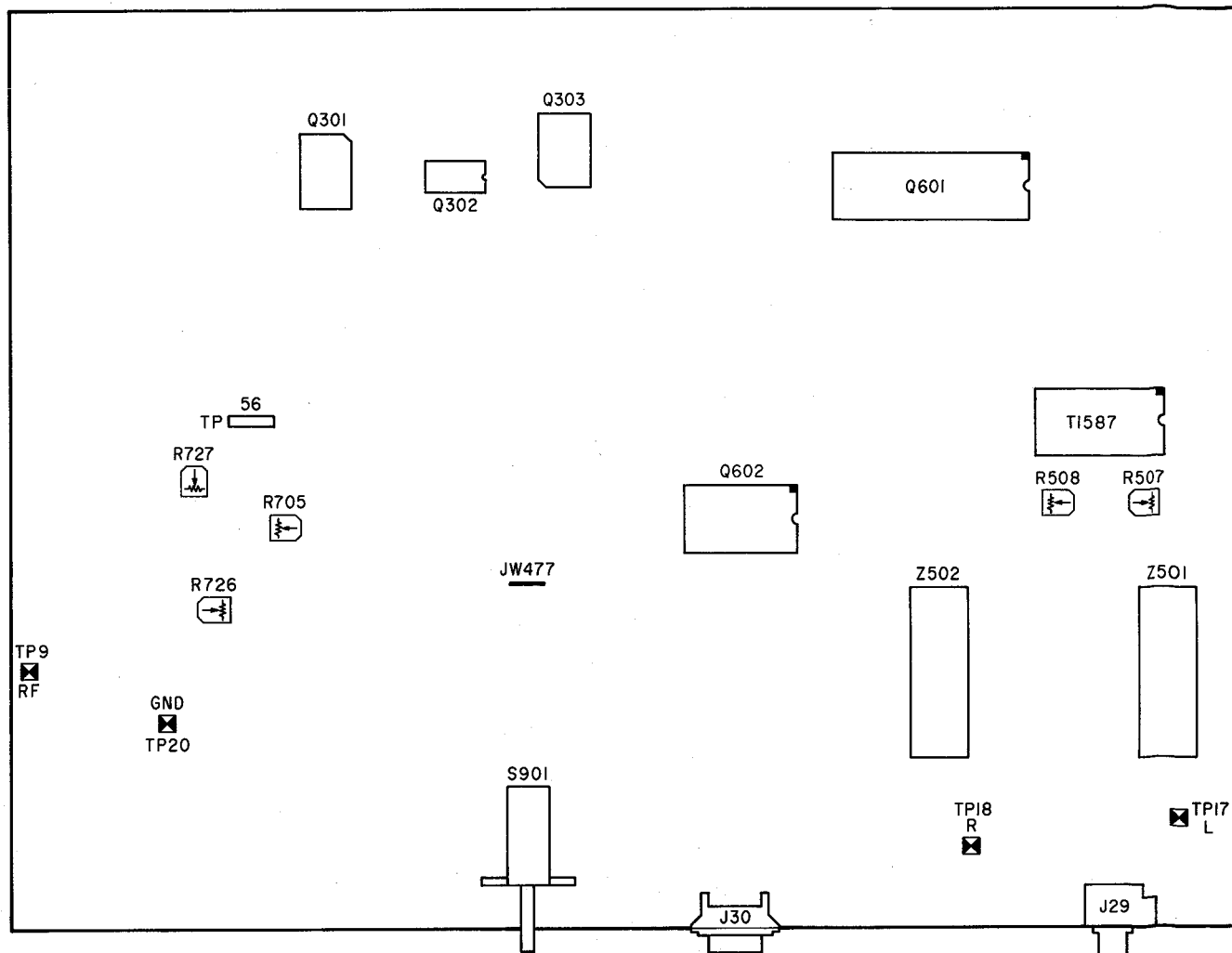
DISC TRAY REMOVAL

1. To move disc tray, rotate pulley of UD motor counterclockwise and entire mecha assembly moves down.
2. Remove disc tray stopper metal fitting and mounting screw, and the disc tray will be moved forward.

CLAMPER LEVER REMOVAL

1. Remove one screw (K), and the clamber lever will be removed.
2. Remove one screw (L) of clamber assembly mounted on clamber lever and remove clamber assembly. Assembly the upper and lower halves of the clamber with the screw and use it as a jig.





Adjustment Jigs

1. Laser Power Checker
2. Test Disc A (YEDS 7)
3. Oscilloscope
4. DC Voltmeter
5. Clamper
6. Adjusting Driver (Insulator)

Adjustment Procedures in Pickup Replacement

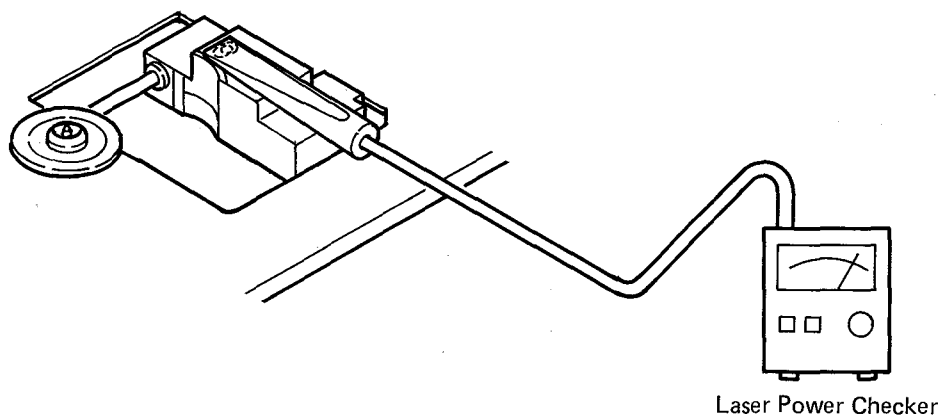
	Item	Reference Value	Disc	Operation Switch	Test Point	Adjustment Point	Note
1	Laser Power Adjustment	Light output $270\mu\text{W}$	Not loaded	Power ON	Laser pickup lens	Mecha P.C. Board R112	Cut JW517
	After adjustment, connect JW517.						
2	Focus Balance Adjustment	RF amplitude max.	Disc A	PLAY	TP9 TP20	Mecha APC P.C. Board R124	
	Laser Power Fine Adjustment	RF amplitude 1.0V(p-p)	Disc A	PLAY	TP9 TP20	Mecha P.C. Board R112	
3	Tracking Error Offset Adjustment	DC offset 0V center	Disc A	PLAY	TP5 TP6	Main P.C. Board R726	Cut JW477
	Tracking Gain Adjustment	Tracking Amplitude 0.7V(p-p)	Disc A	PLAY	TP6	Main P.C. Board R727	Cut JW477
4	Focus Gain Adjustment	Focus Error amplitude 0.4V	Disc A	PLAY	TP2	Main P.C. Board R705	Cut JW477
	After adjustment, connect JW477.						
5	DC Offset Adjustment	DC $0\text{V} \pm 10\text{mV}$	Disc A	PLAY	TP17(L) TP18(R)	Main P.C. Board R507(L), R508(R)	

ADJUSTMENT PROCEDURES AFTER LASER PICK-UP REPLACEMENT

☆ Hdd all semi-fixed resistors (except R112) in their original positions set before replacement of the pickup (almost no alignment is necessary).

1. Laser Power Adjustment

- 1) Turn power of unit OFF.
- 2) Turn semi-fixed resistor (R112, 10K ohm) at the side of pickup, on mecha P.C. Board counterclockwise  fully. (laser power min:)
- 3) Cut JW517 of main P.C. Board with a diagonal cutter [Open laser power control signal L.D.C. (Laser Diode Control)].
- 4) Remove laser diode protection short pin of laser pickup.
- 5) Turn power of unit ON. Adjust R112 by turning it clockwise  so that $270\mu\text{W}$ is obtained. (Taking care the power meter sensor does not touch surface of the lens.)
- 6) Turn power of unit OFF.
- 7) Connect JW517 of main P.C. Board by soldering it.

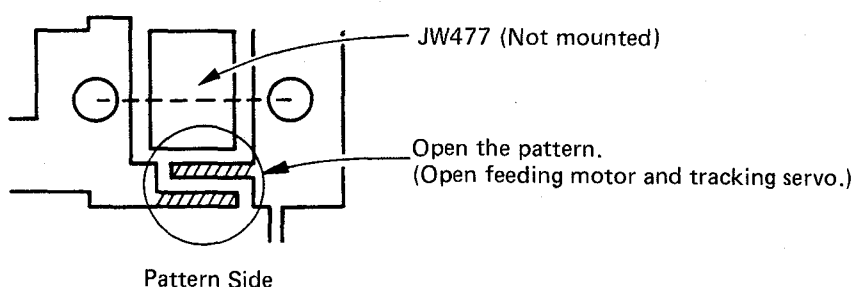


2. Focus Balance Adjustment, Laser Power Fine Adjustment

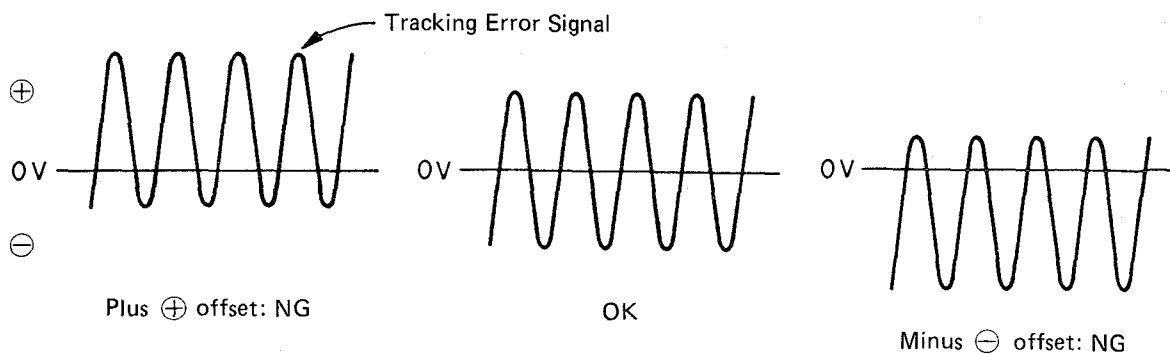
- 1) Remove mecha clamper, put test disc YEDS 7 on disc tray, and secure it with the clamper removed.
- 2) Check to see semi-fixed resistor (R124, 20K ohm) on mecha APC P.C. Board is remained at its original set before pickup replacement.
- 3) Connect oscilloscope to TP20 (GND) and TP9 (RF). (AC range: 0.2V/DIV, 0.5 μ sec/DIV)
- 4) Turn power of unit ON and play track No. 30 of test disc YEDS 7.
- 5) Adjust R124 on mecha APC P.C. Board so that RF amplitude obtains max. (Focus balance adjustment)
- 6) Adjust semi-fixed resistor, R112, 10K ohm on pickup mecha P.C. Board so that RF amplitude obtains 1.0V (Peak to Peak). (Laser power fine adjustment)

3. Tracking Error Offset Adjustment

- 1) Check that R726 10K ohm on main P.C. Board is remained at its original position set before pickup replacement.
- 2) Turn power of unit ON and play track No. 11.
(Note: If adjustment of R726 on APC mecha P.C. Board is upset excessively, normal play operation can not be expected.)
- 3) Open JW477 pattern on main P.C. Board. (Unsolder it.)



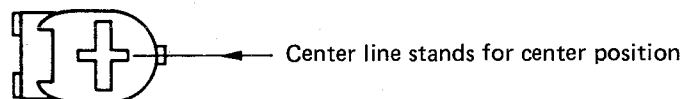
- 4) Connect oscilloscope to TP5 (GND) and TP6 (tracking error signal) on main P.C. Board (DC range: 0.2V/DIV, 5msec/DIV)
- 5) Adjust semi-fixed resistor R726 20K ohm on main P.C. Board so that DC offset of tracking error signal obtains 0V.



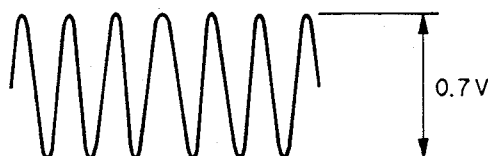
- 6) Hold the unit under the same condition to proceed next adjustments, tracking error and focus servo gain.

4. Tracking, Focus Gain Adjustment

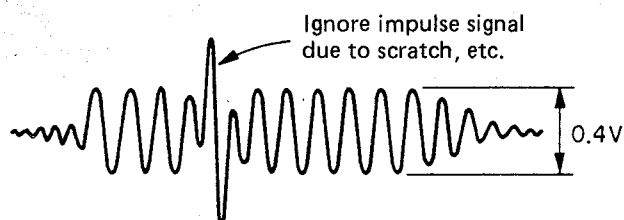
- 1) Check that semi-fixed resistor R705 10K ohm (focus gain) and R727 10K ohm (tracking gain) are remained at their original positions set before pickup replacement.



- 2) Adjust R727 so that tracking error amplitude at TP6 obtains 0.7V (peak to peak).



- 3) Adjust R705 so that amplitude obtains 0.4V (peak to peak) with oscilloscope connected to TP2 (focus error signal).



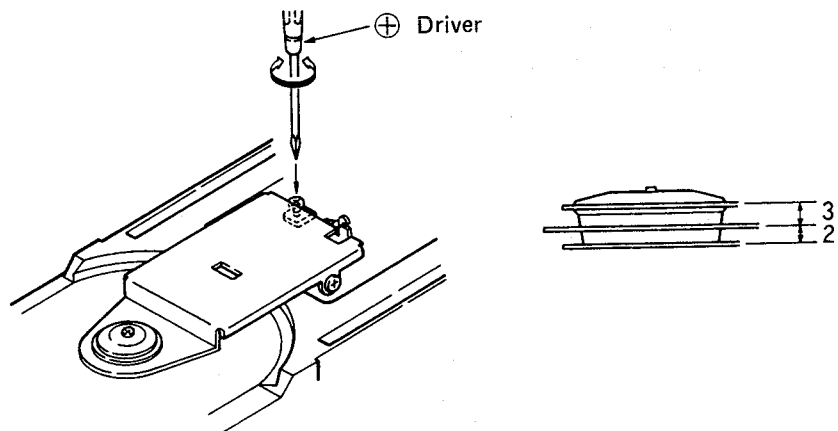
- 4) Turn power of unit OFF. Solder JW477 on main P.C. Board as they were connected.

5. Analog Output Offset Adjustment

- 1) Turn power of unit ON.
- 2) Connect DC voltmeter or oscilloscope to TP17, L ch and TP18, R ch on main P.C. Board (DC range). Adjust semi-fixed resistors R507 10K ohm (L ch) and R508 10K ohm (R ch) so that offset voltage obtains $0V \pm 10mV$.

CLAMPER HEIGHT ADJUSTMENT

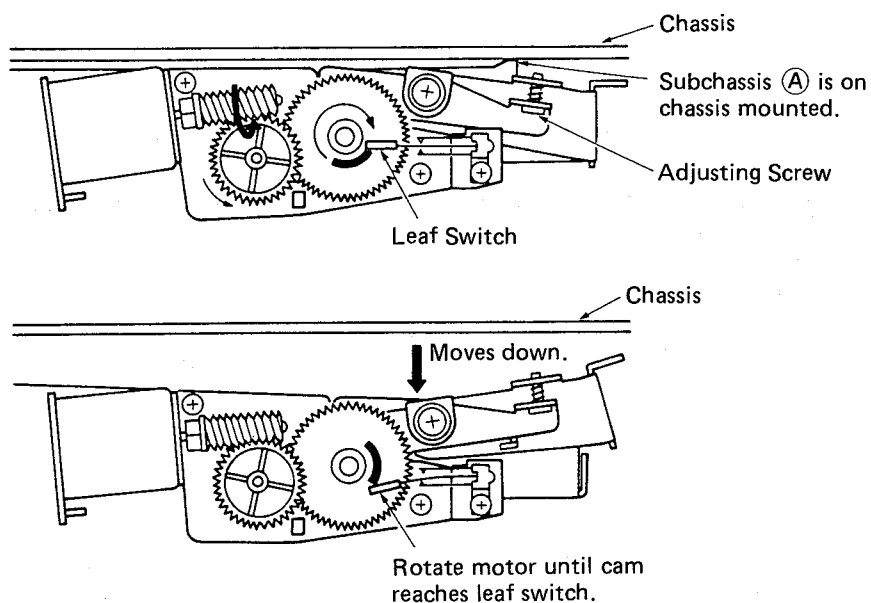
1. Turn gear counterclockwise for clamber to fix disc.
2. Adjust screw so that height ratio of clamber and lever becomes 3 : 2 as shown in figure.

**MECHA ASSEMBLY MOVEMENT PROCEDURE**

Turn motor pulley counterclockwise until opposite end of cam reaches leaf switch, as shown and the Mecha Assembly moves down and allows tray motion from (A) to (B) or (B) to (A).

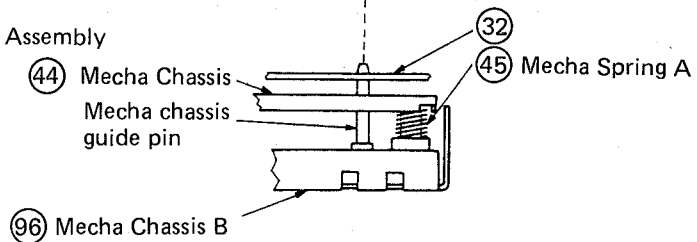
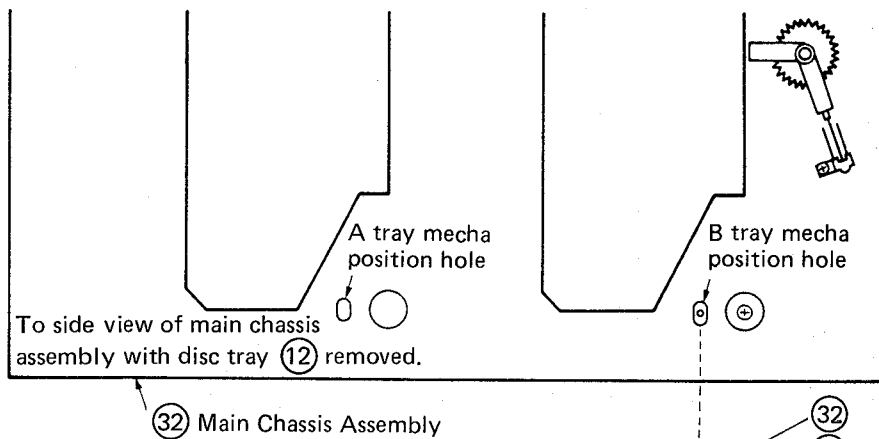
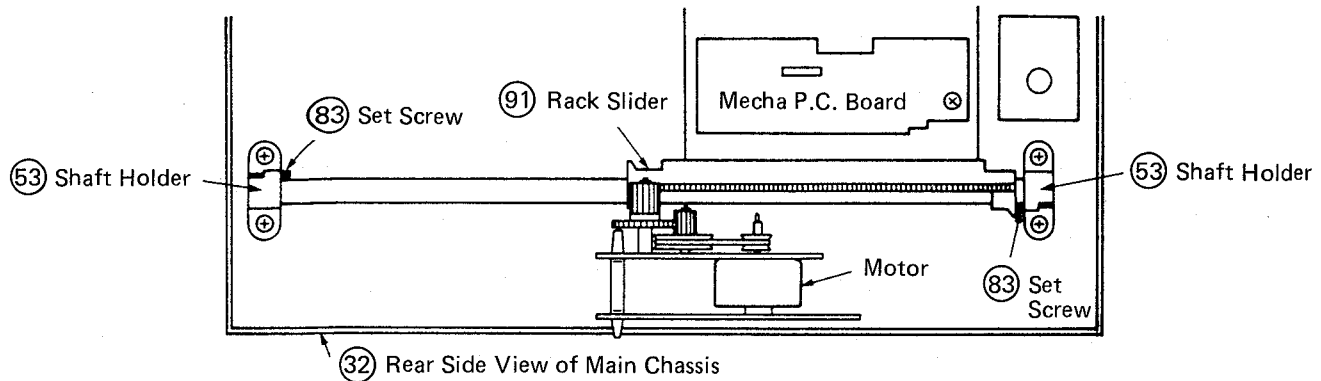
MECHA ASSEMBLY HEIGHT ADJUSTMENT

When mecha assembly is moved down, turn motor pulley clockwise until no clearance is obtained between Mecha Assembly sub chassis and chassis. If there is a clearance adjust adjusting screw by turning it.



MECHA ASSEMBLY POSITION ADJUSTMENT

Mecha Assembly Position, when it is moved from tray (A) to tray (B), is determined by adjusting right set screw (B) so that mecha chassis guide pin of mecha chassis (B) comes out at center of (B) tray mecha position hole of main chassis 32. When mecha assembly moves from tray (B) to tray (A), the mecha position is determined by adjusting left set screw 83 until the guide pin appears at center of (A) tray mecha position hole.



13. IC TERMINAL FUNCTION

TMP4740P Pin Connection

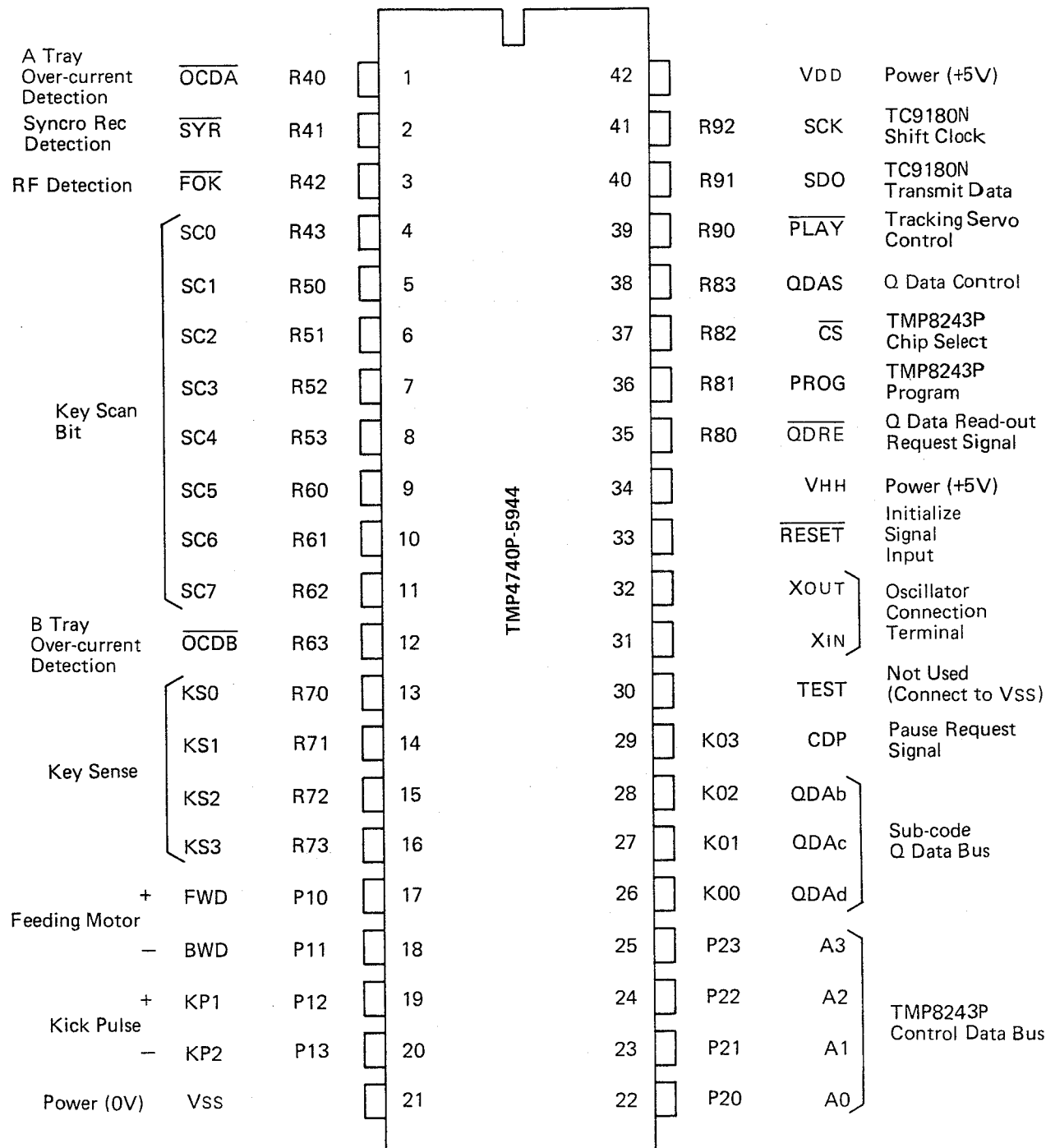


Table 2-1 TMP4740P Terminals Function

Pin No.	Port Name	Signal Name	Input/Output	Initial Value	Function	
1	R4	R40	$\overline{\text{OCDA}}$	Input	H	Over current detection signal in A tray motor direction.
2		R41	$\overline{\text{SYR}}$	Input	H	"L" at SK-V11 cassette deck syncro record mode. Connect this terminal to "L", TOTAL TIME will be always displayed.
3		R42	$\overline{\text{FOK}}$	Input	H	RF detection signal from pick-up. "L" with RT signal, "H" without RF signal.
4		R43	SC0	Output	H	Key Scan

Pin No.	Port Name		Signal Name	Input/Output	Initial Value	Function
26	K0	K00	$\overline{\text{QDA}}_{\text{d}}$	Input	*	TC9178AF Q data bus bit 0
27		K01	QDA_{c}	Input	*	TC9178AF Q data bus bit 1
28		K02	QDA_{b}	Input	*	TC9178AF Q data bus bit 2
29		K03	CDP	Input	*	CD player pause signal, pause is set with positive pulse continuing more than 20mS.
35	R8	R80	$\overline{\text{QDRE}}$	Input	H	Q data read-out request signal from TC9178AF.
36		R81	PROG	Output	H	Clock output to TMP8243P, transmitting port address and command code at transition from "H" to "L", and showing data enable at transition from "L" to "H".
37		R82	$\overline{\text{CS}}$	Output	H	Chip select signal to TMP8243P (Active at Low).
38		R83	QDAS	Output	H	Q data read-out clock to TC9178AF.
39	R9	R90	$\overline{\text{PLAY}}$	Output	H	Tracking servo switch
40		R91	SDO	Output	L	Serial data port to TC9180N
41		R92	SCK	Output	L	Serial data shift clock port to TC9180N
21			VSS	Power	L	Power (0V)
30			TEST	Input	L	Not used (Connect to VSS)
31			XIN	Input	*	Oscillator connection terminal
32			XOUT	Output	*	Oscillator connection terminal
33			$\overline{\text{RESET}}$	Input	*	Initialize signal input
34			VHH	Power	H	Power (+5V)
42			VDD	Power	H	Power (+5V)

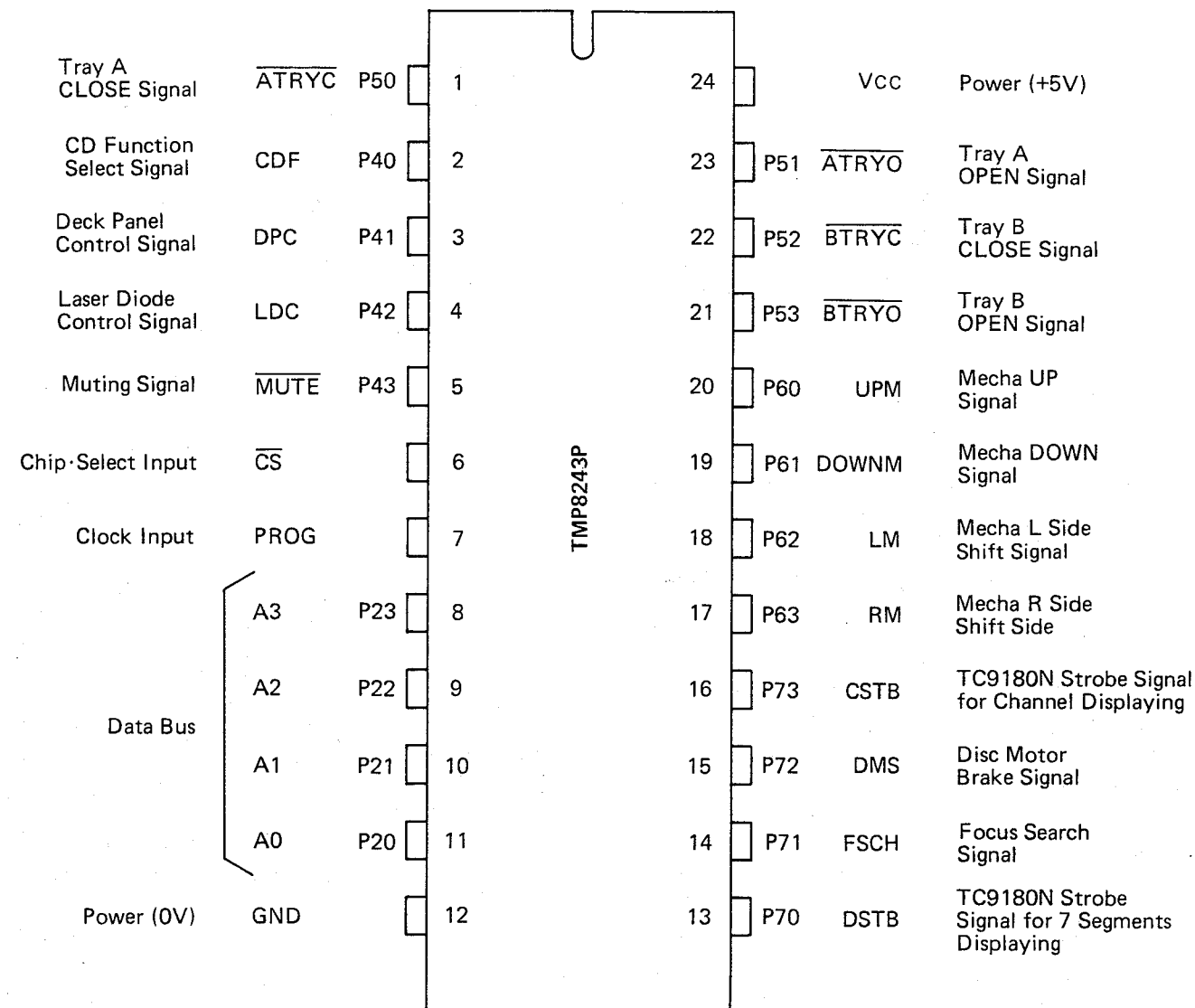
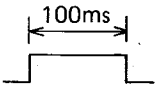
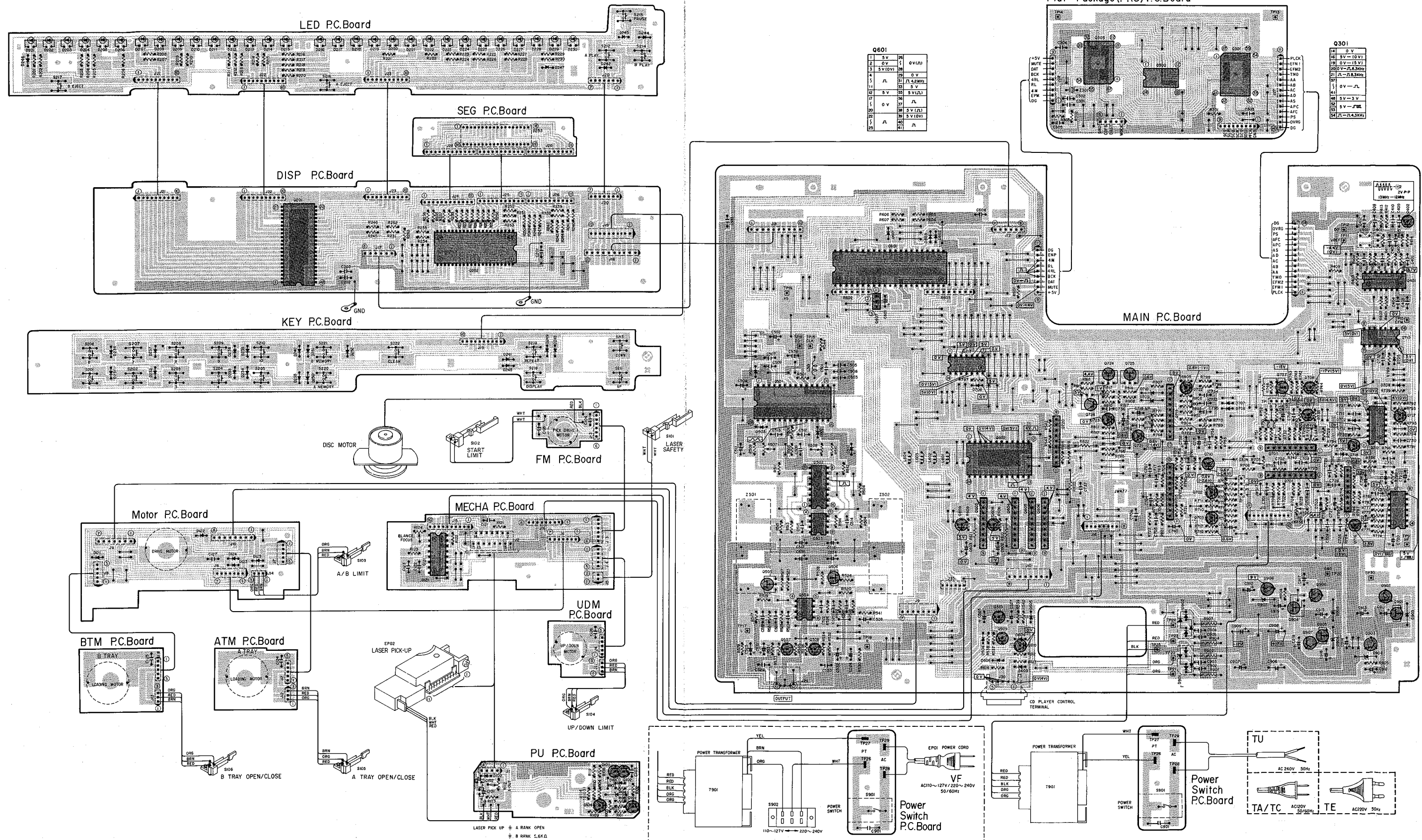


Table 2-2 TMP8243) Terminal Function

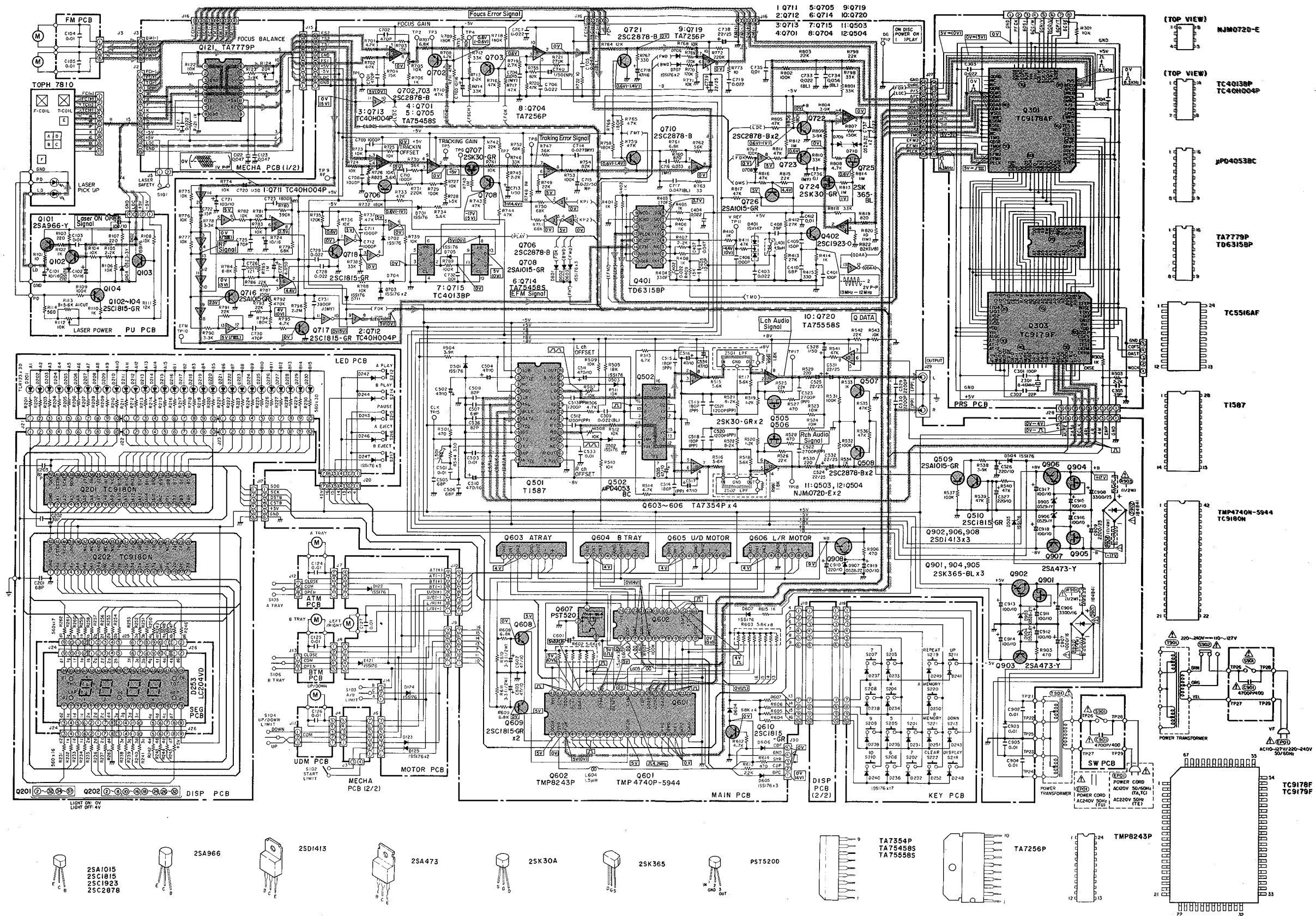
Pin No.	Port Name	Signal Name	Input/Output	Initial Value	Function
1	P5	P50 ATRYC	Output	H	Tray A close signal Closes at Low
21		P53 BTRYO	Output	H	Tray B open signal Opens at Low
22		P52 BTRYC	Output	H	Tray B close signal Closes at Low
23		P51 ATRYO	Output	H	Tray A open signal Opens at Low

Pin No.	Port Name	Signal Name	Input/Output	Initial Value	Function
2	P4	P40 CDF	Output	L	CD function select signal Developed with effective play key entered. 
3		P41 DPC	Output	L	Deck pause control signal Syncro deck pause at Low
4		P42 LDC	Output	L	Laser diode ON/OFF signal Laser diode is ON at High, OFF at Low.
5		P43 MUTE	Output	L	Muting signal Muting ON at Low, OFF at High
8	P2	P23 A3	Input	*	Command data bus from TMP4740P
9		P22 A2	Input	*	Command data bus from TMP4740P
10		P21 A1	Input	*	Command data bus from TMP4740P
11		P20 A0	Input	*	Command data bus from TMP4740P
13	P7	P70 DSTB	Output	L	TC9180N strobe signal For 7 segments display only
14		P71 FSCH	Output	H	Focus search signal
15		P72 DMS	Output	H	Disc motor brake signal
16		P73 CSTB	Output	L	TC9180N strobe signal For channel displaying only
17	P6	P63 RM	Output	H	Mecha unit R direction shift signal Active at Low
18		P62 LM	Output	H	Mecha unit L direction shift signal Active at Low
19		P61 DOWNM	Output	H	Mecha unit Down signal Active at Low
20		P60 UPM	Output	H	Mecha unit UP signal Active at Low
6		CS	Input		Chip select input (Active at Low)
7		PROG	Input	*	Clock input. Accepts port address command code from P20 ~ P23 at transition from "H" to "L", and shows that data on P20 ~ P23 are enable at transition from "L" to "H".
12		GND	Power		0V
24		VCC	Power		+5V

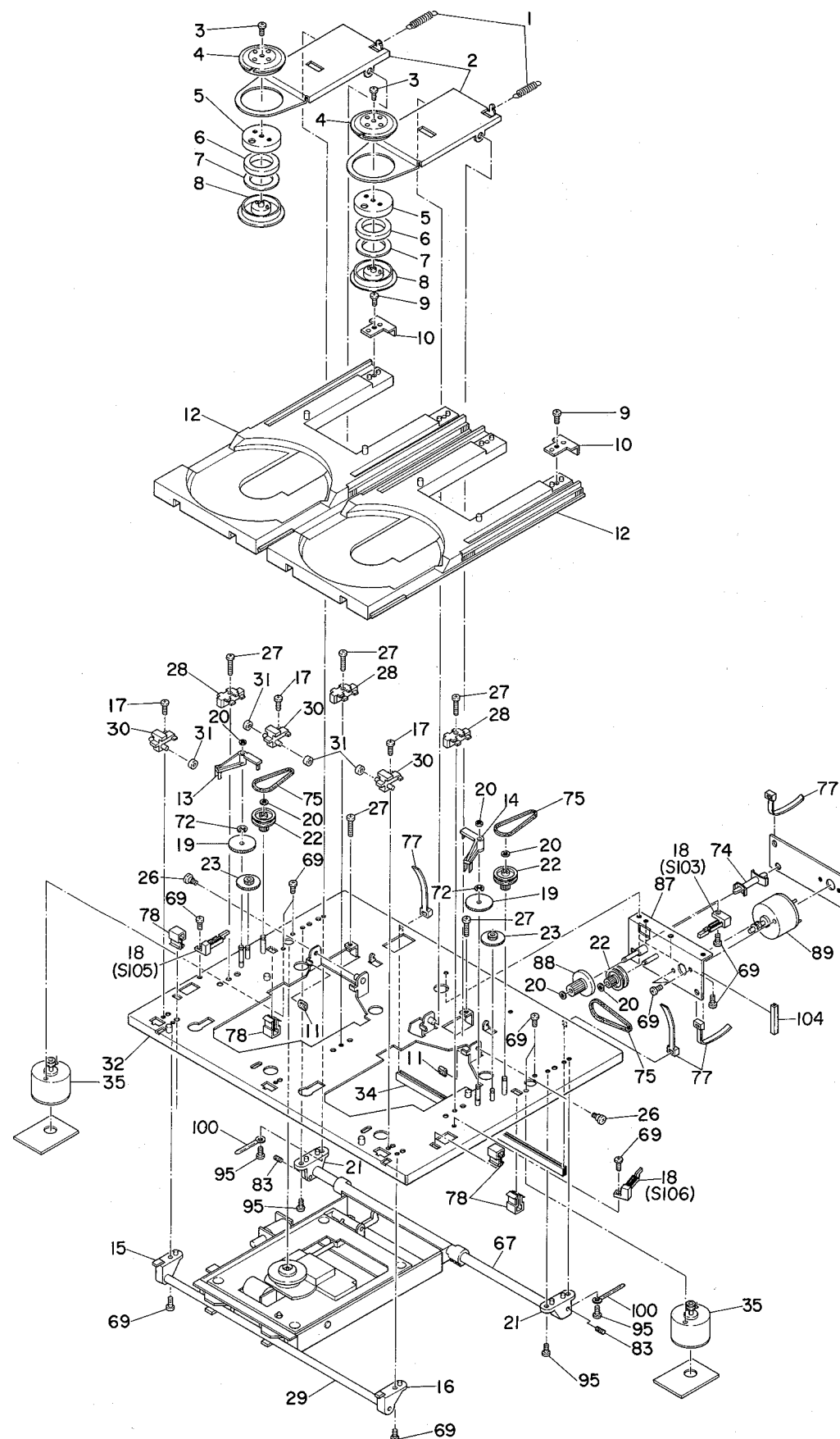
14. ELECTRICAL PARTS LOCATIONS



15. SCHEMATIC DIAGRAM

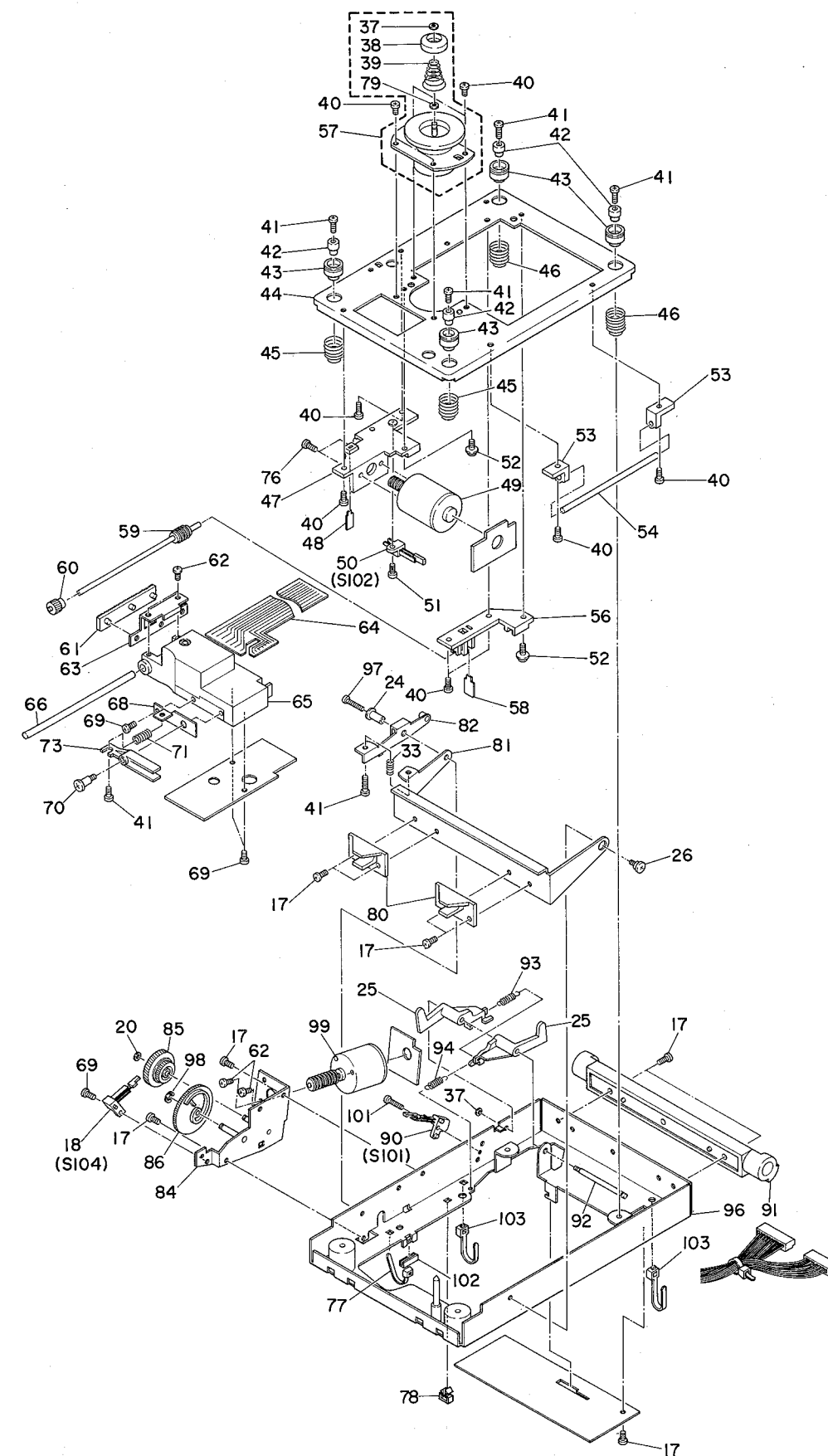


16-1. MECHANISM EXPLODED VIEW (1)



NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

16 -2.MECHANISM EXPLODED VIEW (2)



NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

17. MECHANISM PARTS LIST

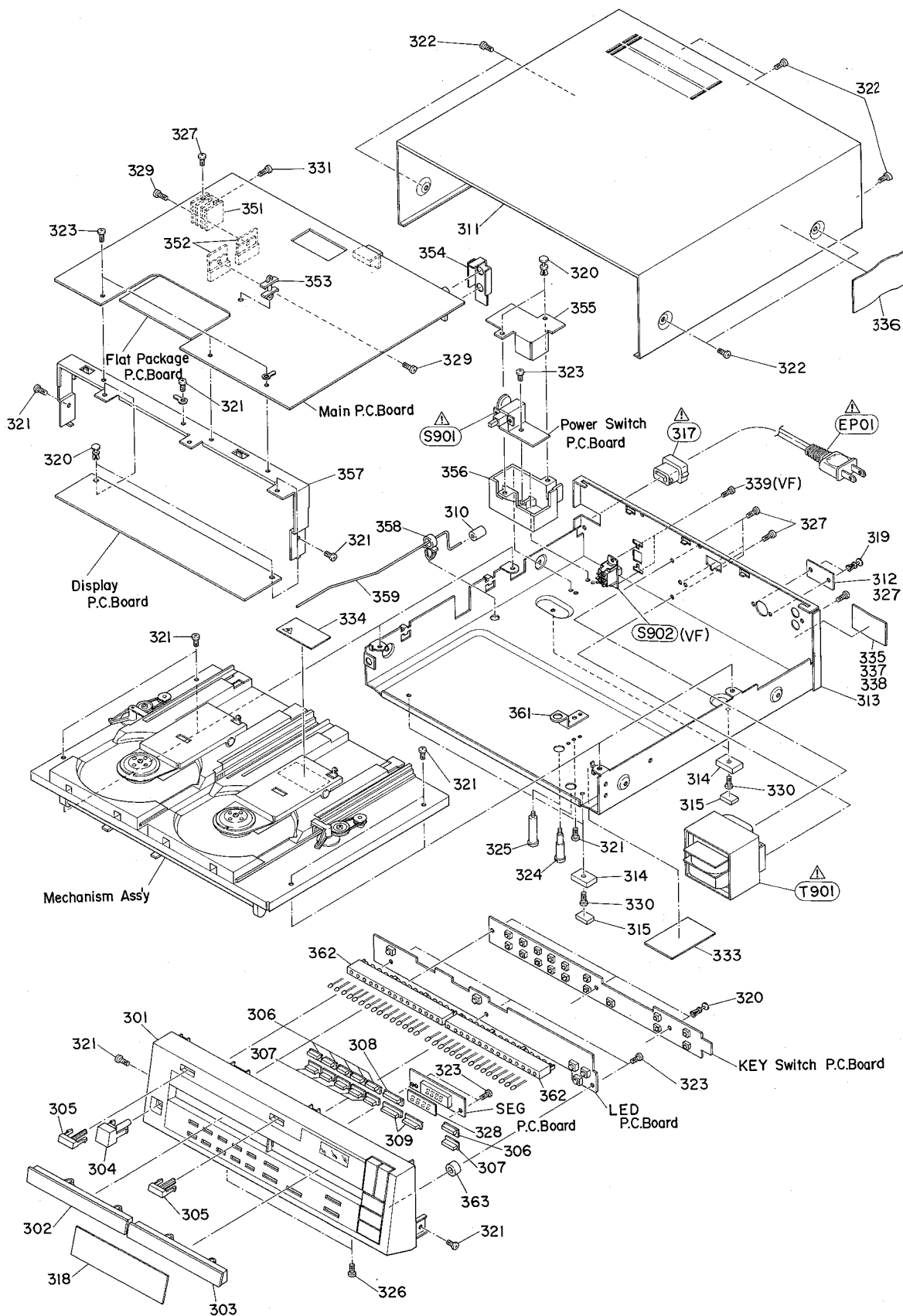
CAUTION:

The  mark, the symbol No. circled with oval in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
1	25776805	Spring, Clamper Lifter
3	22701311	Screw, $\phi 2 \times 5\text{mm}$, BID Tapping
4	20754201	Clamper Plate
5	20748008	Clamper Yoke
6	20754089	Magnet
7	20748257	Magnet Spacer
8	20754091	Clamper
9	22707913	Screw, $\phi 2.6 \times 6\text{mm}$, BID Tapping
11	25761533	Cushion
12	20778189	Disc Tray
13	20754206	End Switch Lever, L
14	20754208	End Switch Lever, R
15	20748221	Shaft Holder, L
16	20748222	Shaft Holder, R
17	22707366	Screw, $\phi 2.6 \times 6\text{mm}$, BID
18	22196598	Leaf Switch
19	20727124	Loading Gear, A
20	20776135	Washer, $\phi 2.1$
21	20748227	Shaft Holder, A
22	20727083	Drive Gear, A
23	20727125	Loading Gear, B
24	20773376	Bush, Arm Lever
25	20754205	Lifter Lever
26	22701472	Screw, $\phi 2.6 \times 13\text{mm}$, FLT
27	22707368	Screw, $\phi 2.6 \times 10\text{mm}$, BID
28	20748226	Tray Guide
30	20748223	Roller Mount
31	20727119	Roller
33	25778219	Spring
35	25791949	Loading Motor Ass'y
37	25764549	Washer, $\phi 1.7$
38	20723146	Center Ring
39	25777270	Spring, Clamper
40	22707350	Screw, $\phi 2.6 \times 5\text{mm}$, BID
41	22707323	Screw, $\phi 2.6 \times 8\text{mm}$, BID
42	22708378	Spacer
43	25761530	Cushion
45	25777426	Spring, A
46	25777427	Spring, B
47	20748230	Motor Mount
48	25779511	Spring, Motor
49	25791945	Pick Drive Motor Ass'y
50	22196597	Leaf Switch

Symbol No.	Part No.	Description
51	22708040	Screw, $\phi 2 \times 5\text{mm}$, BID Tapping
52	22708405	Screw, $\phi 2.6 \times 10\text{mm}$
53	20776143	Shaft Holder, B
54	20764260	Guide Shaft, B
56	20776142	Shaft Holder, C (A)
57	25791946	Disc Motor Ass'y
58	25779512	Spring, Drive
59	25791905	Sub Drive Shaft Ass'y
60	20727130	Gear, WH
61	20727127	Rack Gear
62	22701467	Screw, $\phi 2 \times 3\text{mm}$, BID
63	25779510	Spring, Rack
64	22192633	Flexible P.C. Board
65	22155211	Laser Pick-up, TOPH7810
66	20764197	Guide Shaft, A
69	22707494	Screw, $\phi 2.6 \times 4\text{mm}$, BID
70	22708271	Screw, $\phi 2.6 \times 3 \times 7.5\text{mm}$
71	25777425	Spring, Pick-up
72	22703118	E Ring, $\phi 2$
73	20754207	Guide Lever
75	25759027	Drive Belt
76	22707265	Screw, $\phi 2 \times 4\text{mm}$, BID
79	25764392	Washer, $\phi 1.9$
80	20748224	Arm Slider
83	22708088	Screw, $\phi 2.6 \times 7.5\text{mm}$
85	20727121	Gear, A
86	20757036	Cam Gear
88	20727120	Drive Gear, B
89	25791950	Drive Motor Ass'y
90	22196068	Leaf Switch
91	20727123	Slide Rack
93	25776806	Spring, Lever
94	25776807	Spring
95	22707367	Screw, $\phi 2.6 \times 8\text{mm}$, BID
97	22707369	Screw, $\phi 2.6 \times 12\text{mm}$, BID
98	22703279	E Ring, $\phi 3$
99	25791951	UD Motor Ass'y, Up/Down
101	22701290	Screw, $\phi 2 \times 6\text{mm}$, PAN

18. CABINET EXPLODED VIEW



NOTE: Parts excluded in the parts list are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

19. CABINET PARTS LIST

CAUTION:

CAUTION:
The  mark, the symbol No. circled with oval in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
301	22825440	Front Panel Ass'y
302	22883114	Tray Panel, A, Left
303	22883115	Tray Panel, B, Right
304	22884599	Knob, Power
305	22884598	Knob, Open/Close
306	22884603	Knob, 1 ~ 5/Display
307	22884604	Knob, 6 ~ 0/Repeat
308	22884605	Knob, Memory A
309	22884606	Knob, Memory B/Clear
310	22764307	Joint Knob, Power
311	20015440	Top Cover
312	20024174	Cover Plate
313	22714396	Chassis, Jack Plate (TA, TC)
313	22714397	Chassis, Jack Plate (TE)
313	22714398	Chassis, Jack Plate (TU)
313	22714403	Chassis, Jack Plate (VF)
314	22874078	Foot
315	22766171	Cushion, Foot
317	25884322	Cord Bush
318	22907076	Caution Label, Screw, Front
319	22705021	Plastic Rivet, $\phi 3 \times 3.5\text{mm}$
320	22705020	Plastic Rivet, $\phi 3 \times 4.5\text{mm}$
321	22707842	Screw, $\phi 3 \times 8\text{mm}$, BID Tapping
322	22707911	Screw, $\phi 3 \times 8\text{mm}$, BID Tapping, BLK
323	22702202	Screw, $\phi 3 \times 8\text{mm}$, BID Tapping, RED
324	22708352	Screw, Mechanism
325	22708353	Screw, Pick-up
326	22707942	Screw, $\phi 3 \times 6\text{mm}$, BID Tapping, BLK
327	22708118	Screw, $\phi 3 \times 8\text{mm}$, BID Tapping, Chrome
328	22766152	LED Filter
329	22707445	Screw, $\phi 3 \times 6\text{mm}$, BID
330	22707910	Screw, $\phi 3 \times 6\text{mm}$, BID Tapping
331	22707520	Screw, $\phi 3 \times 8\text{mm}$, BID
333	22907078	Caution Label, Screw, Bottom
334	22907058	Caution Label, Laser-3
335	22906500	Caution Label, Class-1 (TE)
336	22906509	Caution Label, Class-TU (TU)
337	22907068	Caution Label, CD (TC)
338	22900504	Caution Label (TA)
339	22707364	Screw, $\phi 3 \times 4\text{mm}$, BID Chrome (VF)

Symbol No.	Part No.	Description

20. PARTS LIST

CAUTION:

The Δ mark, the symbol No. circled with oval in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
TRANSISTORS, IC'S & DIODES		
Q101	A6533240	Transistor, 2SA966-Y
Q102, 103, 104	A6317460	Transistor, 2SC1815NEW-GR
Q121	22117641	IC, TA7779P
Q201, 202	B0411800	IC, TC9180N
Q401	B0272167	IC, TD6315BP
Q402	A6319020	Transistor, 2SC1923-O
Q501	22117358	IC, T1587
Q502	22117199	IC, μ PD4053BC
Q505, 504	22117053	IC, NJM072D-E
Q505, 506	A6048370	Transistor, 2SK30ATM-GR
Q507, 508	A6342210	Transistor, 2SC2878-B
Q509	A6534060	Transistor, 2SA1015-GR
Q510	A6317460	Transistor, 2SC1815NEW-GR
Q601	22117642	IC, TMP4740P-5944
Q602	B0408570	IC, TMP8243P
Q603, 604, 605, 606	B0325460	IC, TA7354P
Q607	22117550	IC, PST520D
Q608, 609, 610	A6317460	Transistor, 2SC1815NEW-GR
Q701	B0350010	IC TA75458S
Q702, 703	A6342210	Transistor, 2SC2878-B
Q704	B0320320	IC, TA7256P
Q705	B0350010	IC, TA75458S
Q706	A6342210	Transistor, 2SC2878-B
Q707	A6048370	Transistor, 2SK30ATM-GR
Q708	A6534060	Transistor, 2SA1015-GR
Q710	A6342210	Transistor, 2SC2878-B
Q711, 712, 713	B0471040	IC, TC40H004P
Q714	B0350010	IC, TA75458S
Q715	B0470135	IC, TC4013BP
Q716	A6534060	Transistor, 2SA1015-GR
Q717, 718	A6317460	Transistor, 2SC1815NEW-GR
Q719	B0320320	IC, TA7256P
Q720	B0350510	IC, TA75558S
Q721, 722, 723	A6342210	Transistor, 2SC2878-B
Q724	A6048370	Transistor, 2SK30ATM-GR
Q725	A6058730	Transistor, 2SK365-BL
Q726	A6534060	Transistor, 2SA1015-GR

Symbol No.	Part No.	Description
Q901	A6058730	Transistor, 2SK365-BL
Q902	A6868350	Transistor, 2SD1413
Q903	A6500740	Transistor, 2SA473-Y
Q904, 905	A6058730	Transistor, 2SK365-BL
Q906	A6868350	Transistor, 2SD1413
Q907	A6500740	Transistor, 2SA473-Y
Q908	A6868350	Transistor, 2SD1413
D101, 102	A7160570	Diode, 1SS176
D104	A7109333	Diode, 05Z3.3-Y, Zener
D121, 122, 123, 124, 125	A7160570	Diode, 1SS176
D201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230	A8601100	Diode, TLR123, LED
D231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252	A7160570	Diode, 1SS176
D253	22119105	Diode, LC204VD, Display
D401	A7288890	Diode, 1SV147, Variable Cap.
D501, 502, 503, 504, 505	A7160570	Diode, 1SS176

Symbol No.	Part No.	Description
D601, 602, 603, 604, 605, 606, 607,	A7160570	Diode, 1SS176
D701, 702, 703, 704, 705, 706, 707, 708	A7160570	Diode, 1SS176
D709, 710 D711	A7110209 A7160570	Diode, 05Z8.2-Z, Zener Diode, 1SS176
△ D901, 902	A7670800	Diode, 1B4B41
D903	A7110076	Diode, 05Z6.2-Y, Zener
D904	A7110017	Diode, 05Z5.6-Y
D905, 906	A7110262	Diode, 05Z9.1-Y
D907	A7110209	Diode, 05Z8.2-Z, Zener
ELECTRICAL PARTS		
L401	22245445	Coil, PLL
L501	22295127	Coil
L601, 602, 603, 604	22291188	Choke Coil, 1.5μH
△ T901	22224473	Power Transformer (TA, TC)
△ T901	22224474	Power Transformer (TE)
△ T901	22224475	Power Transformer (TU)
△ T901	22224516	Power Transformer (VF)
S101	22196068	Leaf Switch, Laser ON/OFF
S102	22196597	Leaf Switch, Start Limit
S103	22196598	Leaf Switch, L/R Limit
S104	22196598	Leaf Switch, Up/Down Limit
S105, 106	22196598	Leaf Switch, Open/Close
S201, 202,	22196601	Key Switch, Key 1/2
S203, 204,	22196601	Key Switch, Key 3/4
S205, 206,	22196601	Key Switch, Key 5/6
S207, 208,	22196601	Key Switch, Key 7/8
S209, 210,	22196601	Key Switch, Key 9/0
S211, 212,	22196601	Key Switch, Up/A Play
S213, 214,	22196601	Key Switch, Down/B Play
S215, 216,	22196601	Key Switch, Pause/A
	22196601	Key Switch, Open, Close
S217, 218,	22196601	Key Switch, B Open, Close/ Display
S219, 220,	22196601	Key Switch, Repeat/Memory
S221, 222	22196601	Key Switch, B Memory/Clear

Symbol No.	Part No.	Description
△ S901	22196362	Push Switch, Power (TA, TC, TE, VF)
△ S901	22196465	Push, Switch, Power (TU)
△ S902	22196111	Voltage Selector Switch (VF)
J28 J30	22198012 22186009	Pin, Jack, US2P, Output Control Socket, 5P, CD Player
Z301	22153355	Lithium Oscillator, 8.4672MHz
Z501, 502	22137775	Low-pass Filter Ass'y
△ EP01	22176574	Power Cord (TA, TC)
△ EP01	22176286	Power Cord (TE)
△ EP01	22176628	Power Cord (TU)
△ EP01	22176125	Power Cord (VF)
EP02 EP03	22155211 22192736	Laser Pick-up, TOPH810 Plate Package P.C. Board (With TC9178AF-BL, TC5516AF, TC9179F-BL)
EP04	22197004	Short Plug, 5P, CD Control
CAPACITORS		
J = ±5%, K = ±10%, M = ±20%, Z = -20+80%		
ABBREVIATIONS: EL = Electrolytic, CD = Ceramic Disk, BL = Barrier Layer, MY = Mylar, PP = Polypropylene		
C101, 102	22440444	EL, 10mfd, 16V
C103, 104	22342103	CD, 0.01mfd, 50V, Z
C105	22342103	CD, 0.01mfd, 50V, Z
C106	22483101	EL, 100mfd, 10V
C121	22342223	CD, 0.022mfd, 50V, Z
C122, 123	22360331	BL, 0.047mfd, 25V, M
C124, 125	22342103	CD, 0.01mfd, 50V, Z
C126, 127	22342103	CD, 0.01mfd, 50V, Z
C201	22362680	CD, 68pF, 50V, K
C202	22362390	CD, 39pF, 50V, K
C203	22362820	CD, 82pF, 50V, K
C301	22362101	CD, 100pF, 50V, K
C302	22360134	CD, 22pF, 50V, J, CH
C303, 304	22342223	CD, 0.022mfd, 50V, Z
C305	22362390	CD, 39pF, 50V, K

Symbol No.	Part No.	Description
C401	22362101	CD, 100pF, 50V, K
C402, 403	22342223	CD, 0.022mfd, 50V, Z
C404	22342223	CD, 0.022mfd, 50V, Z
C405, 406	22349102	CD, 1000pF, 50V, K
C407	22371473	MY, 0.047mfd, 50V, J
C408	22362390	CD, 39pF, 50V, K
C409	22362151	CD, 150pF, 50V, K
C410	22362680	CD, 68pF, 50V, K
C412	22342103	CD, 0.01mfd, 50V, Z
C501	22342103	CD, 0.01mfd, 50V, Z
C502	22483470	EL, 47mfd, 10V
C503	22342103	CD, 0.01mfd, 50V, Z
C504	22483470	EL, 47mfd, 10V
C505, 506	22362680	CD, 68pF, 50V, K
C507	22362680	CD, 68pF, 50V, K
C508	22362820	CD, 82pF, 50V, K
C509	22360329	BL, 0.022mfd, 25V, M
C510, 511	22483471	EL, 470mfd, 10V
C512, 513	22321058	PP, 1200pF, 50V, J
C514, 515	22321084	PP, 180pF, 50V, J
C516, 517	22483470	EL, 47mfd, 10V
C518, 519	22321084	PP, 180pF, 50V, J
C520, 521	22321058	PP, 1200pF, 50V, J
C522, 523	22321062	PP, 2700pF, 50V, J
C524, 525	22486220	EL, 22mfd, 25V
C526, 527	22483221	EL, 220mfd, 10V
C528	22488109	EL, 1mfd, 50V
C529, 530	22321061	PP, 2200pF, 50V, J
C531, 532	22486220	EL, 22mfd, 25V
C533	22342103	CD, 0.01mfd, 50V, Z
C534, 535	22483470	EL, 47mfd, 10V
C536	22362820	CD, 82pF, 50V, K
C601	22488338	EL, 0.33mfd, 50V
C602, 603	22483470	EL, 47mfd, 10V
C701, 702	22349471	CD, 470pF, 50V, K
C703	22485100	EL, 10mfd, 16V
C704	22371153	MY, 0.015mfd, 50V, J
C705	22360331	BL, 0.047mfd, 25V, M
C706, 707	22342223	CD, 0.022mfd, 50V, Z
C708, 709	22349102	CD, 1000pF, 50V, K
C710, 711	22349102	CD, 1000pF, 50V, K
C712	22349102	CD, 1000pF, 50V, K
C713	22488109	EL, 1mfd, 50V
C714	22371273	MY, 0.027mfd, 50V, J
C715	22478228	EL, 0.22mfd, 50V, NP
C716	22371333	MY, 0.033mfd, 50V, J
C717	22360331	BL, 0.047mfd, 25V, M
C718	22485470	EL, 47mfd, 16V
C719	22360329	BL, 0.022mfd, 25V, M
C720	22488109	EL, 1mfd, 50V
C721	22483101	EL, 100mfd, 10V

Symbol No.	Part No.	Description
C722	22362150	CD, 15pF, 50V, K
C723	22371182	MY, 1800pF, 50V, J
C724	22485100	EL, 10mfd, 16V
C725	22349471	CD, 470pF, 50V, K
C726	22342223	CD, 0.022mf, 50V, Z
C727	22488479	EL, 4.7mfd, 50V
C728, 729	22342223	CD, 0.022mfd, 50V, Z
C730	22349471	CD, 470pF, 50V, K
C731	22371392	MY, 3900pF, 50V, J
C732	22349103	CD, 0.01mfd, 50V, K
C733	22360329	BL, 0.022mfd, 25V, M
C734	22360553	BL, 0.056mfd, 25V, K
C735	22342103	CD, 0.01mfd, 50V, Z
C736	22371104	MY, 0.1mfd, 50V, J
C737	22342223	CD, 0.022mfd, 50V, Z
C738, 739	22486220	EL, 22mfd, 25V
C740	22478109	EL, 1mfd, 50V, NP
△ C901	22340150	CD, 4700pF, 400V M (TA, TC, TE)
△ C901	22340205	CD, 4700pF, 400V, M (TU)
C902, 903	22342103	CD, 0.01mfd, 50V, Z
C904, 905	22342103	CD, 0.01mfd, 50V, Z
C906	22485332	EL, 3300mfd, 16V
C907	22485102	EL, 1000mfd, 16V
C908	22486332	EL, 3300mfd, 25V
C909	22486222	EL, 2200mfd, 25V
C910	22483221	EL, 220mfd, 10V
C911, 912	22483101	EL, 100mfd, 10V
C913, 914	22483101	EL, 100mfd, 10V
C915, 916	22483101	EL, 100mfd, 10V
C917, 918	22483101	EL, 100mfd, 10V
C919	22483101	EL, 100mfd, 10V
C920	22362391	CD, 390pF, 50V, K

RESISTORS

All resistors are carbon film 1/8W, ±5% unless otherwise noted. 1K ohm = 1000 ohm, 1M ohm = 1000000 ohm

R101	22584100	10 ohm
R102	22584102	1K ohm
R103	22584221	220 ohm
R104	22584103	10K ohm
R105	22584222	2.2K ohm
R106	22584103	10K ohm
R107	22584221	220 ohm
R108	22584153	15K ohm
R109	22584104	100K ohm
R110	22584102	1K ohm
R111	22584123	12K ohm
R112	22658761	10K ohm, B, Semi-fixed Variable

Symbol No.	Part No.	Description
R113	22584562	5.6K ohm
R114	22584561	560 ohm
R121	22584102	1K ohm
R122	22584103	10K ohm
R123	22584392	3.9K ohm
R124	22658827	20K ohm, B, Semi-fixed Variable
R201 to 263	22584561	560 ohm
R301	22584103	10K ohm
R302	22584102	1K ohm
R303	22584222	2.2K ohm
R401, 402	22584102	1K ohm
R403	22570693	270 ohm, 1/4W, F = $\pm 1\%$
R404	22570694	330 ohm, 1/4W, F
R405, 406	22584102	1K ohm
R407	22584222	2.2K ohm
R408	22584102	1K ohm
R409	22584153	15K ohm
R410	22584102	1K ohm
R411	22584473	47K ohm
R412, 413	22584273	27K ohm
R414	22584102	1K ohm
R415	22584331	330 ohm
R501	22584471	470 ohm
R504	22584392	3.9K ohm
R505	22584183	18K ohm
R506	22584472	4.7K ohm
R507, 508	22658826	10K ohm, B, Semi-fixed Variable
R509, 510	22584103	10K ohm
R511, 512	22584103	10K ohm
R513, 514	22584472	4.7K ohm
R515, 516	22584562	5.6K ohm
R517, 518	22584562	5.6K ohm
R519, 520	22584122	1.2K ohm
R521, 522	22584822	8.2K ohm
R523, 524	22555106	10M ohm
R525, 526	22584223	22K ohm
R527, 528	22584471	470 ohm
R529, 530	22584221	220 ohm
R531, 532	22584104	100K ohm
R533, 534	22584102	1K ohm
R535, 536	22584473	47K ohm
R537	22584104	100K ohm
R538	22584392	3.9K ohm
R539, 540	22584473	47K ohm
R541	22584473	47K ohm
R542	22584223	22K ohm

Symbol No.	Part No.	Description
R543	22584103	10K ohm
R544	22584331	330 ohm
R601	22584104	100K ohm
R602	22540764	Composite Part, 5.6K x 6
R603	22540745	Composite Part, 5.6K x 8
R604, 605	22584683	68K ohm
R606, 607	22584683	68K ohm
R608, 609	22584682	6.8K ohm
R610, 611	22547339	3.3 ohm, 1/2W
R612	22584472	4.7K ohm
R613	22584222	2.2K ohm
R614	22584471	470 ohm
R615	22584102	1K ohm
R701, 702	22584472	4.7K ohm
R703, 704	22584153	15K ohm
R705	22658826	10K ohm, B, Semi-fixed Variable
R706	22584102	1K ohm
R707	22584682	6.8K ohm
R708	22584472	4.7K ohm
R709	22584184	180K ohm
R710, 711	22584473	47K ohm
R712	22584333	33K ohm
R713	22584222	2.2K ohm
R714	22584333	33K ohm
R715	22584184	180K ohm
R716, 717	22584473	47K ohm
R718	22584184	180K ohm
R719	22584272	2.7K ohm
R720	22584473	47K ohm
R721	22584274	270K ohm
R722	22584100	10 ohm
R723, 724	22584103	10K ohm
R725	22584103	10K ohm
R726, 727	22658826	10K ohm, B, Semi-fixed Variable
R728	22584152	1.5K ohm
R729	22584104	100K ohm
R730	22584563	56K ohm
R731	22584224	220K ohm
R732	22584184	180K ohm
R733	22584473	47K ohm
R734	22584562	5.6K ohm
R735	22584124	120K ohm
R736	22584103	10K ohm
R737	22584473	47K ohm
R738	22584333	33K ohm
R739	22584103	10K ohm
R740	22584105	1M ohm
R741	22584103	10K ohm
R742	22584223	22K ohm
R743, 744	22584473	47K ohm

Symbol No.	Part No.	Description
R745	22584222	2.2K ohm
R746	22584333	33K ohm
R747	22584563	56K ohm
R748	22584105	1M ohm
R749	22584223	22K ohm
R750, 751	22584683	68K ohm
R752	22584683	68K ohm
R753	22584104	100K ohm
R754, 755	22584823	82K ohm
R758	22584184	180K ohm
R759	22584473	47K ohm
R760	22584821	820 ohm
R761	22584682	6.8K ohm
R762	22584563	56K ohm
R763	22584330	33 ohm
R764	22584123	12K ohm
R765	22584473	47K ohm
R766	22584184	180K ohm
R767	22584331	330 ohm
R768	22584103	10K ohm
R769, 770	22584124	120K ohm
R771	22584103	10K ohm
R772	22584224	220K ohm
R773	22584100	10 ohm
R774, 775	22584103	10K ohm
R776, 777	22584103	10K ohm
R778	22584332	3.3K ohm
R779	22584683	68K ohm
R780	22584394	390K ohm
R781, 782	22584103	10K ohm
R783	22584223	22K ohm
R784	22584682	6.8K ohm
R785	22584105	1M ohm
R786	22584223	22K ohm
R787	22584104	100K ohm
R788	22584103	10K ohm
R789	22584104	100K ohm
R790	22584332	3.3K ohm
R791	22584223	22K ohm
R792	22584474	470K ohm
R793	22584223	22K ohm
R794	22584184	180K ohm
R795	22584472	4.7K ohm
R796	22584225	2.2M ohm
R797	22584104	100K ohm
R798	22584333	33K ohm
R799	22584223	22K ohm
R801	22584333	33K ohm
R802	22584104	100K ohm

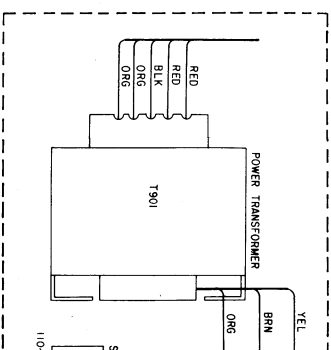
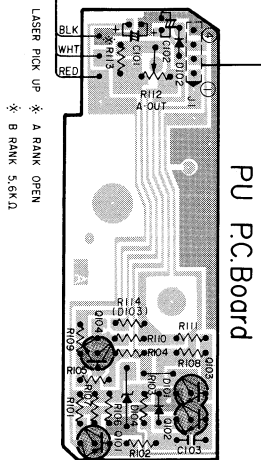
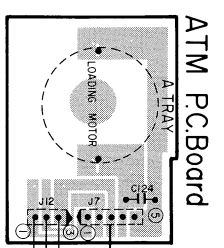
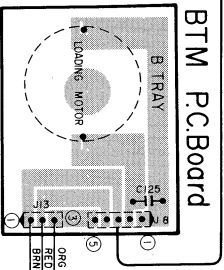
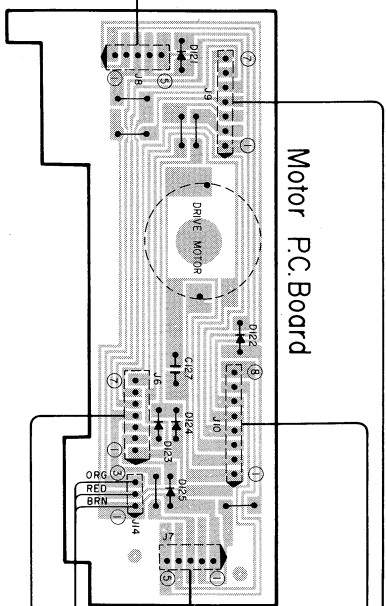
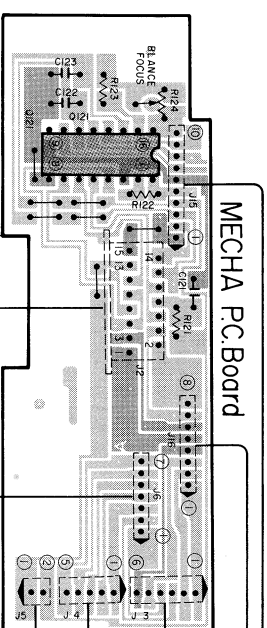
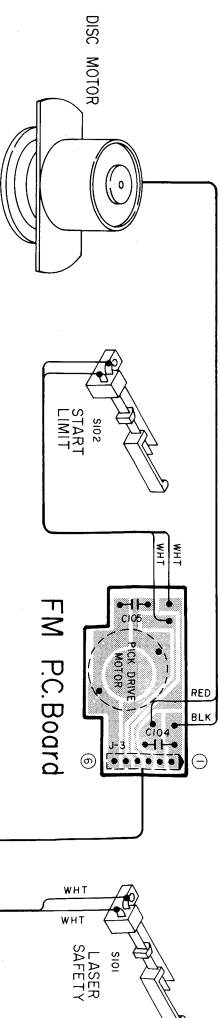
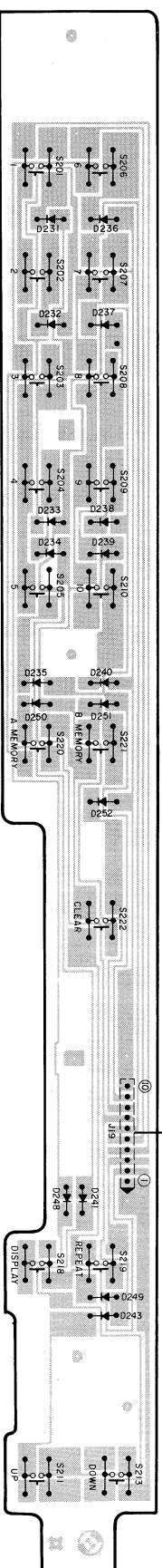
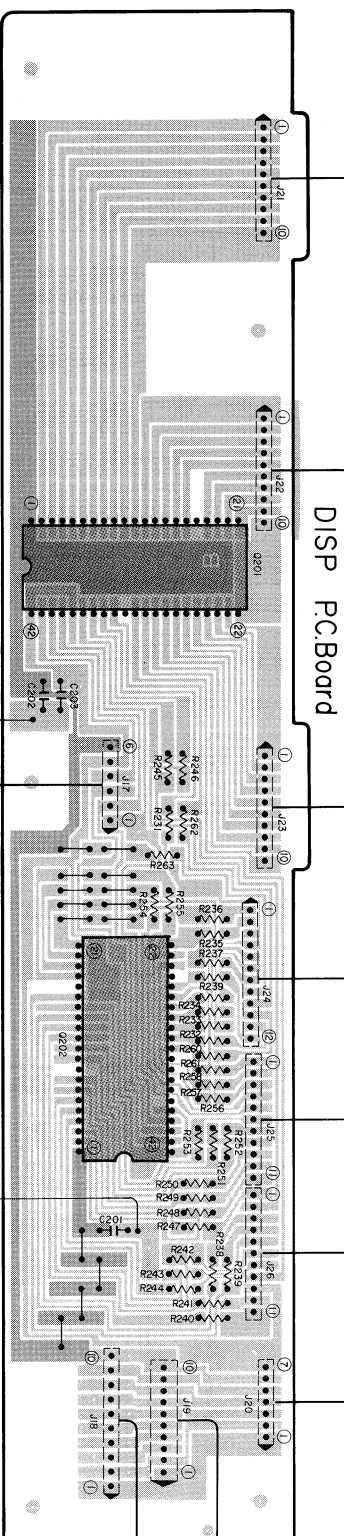
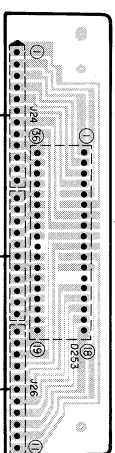
Symbol No.	Part No.	Description
R803	22584223	22K ohm
R804	22584392	3.9K ohm
R805	22584473	47K ohm
R806	22584184	180K ohm
R807	22584154	150K ohm
R808	22584472	4.7K ohm
R809	22584392	3.9K ohm
R810	22584333	33K ohm
R811	22584473	47K ohm
R812, 813	22584105	1M ohm
R814	22584105	1M ohm
R815	22584223	22K ohm
R816, 817	22584473	47K ohm
R818	22584333	33K ohm
R819	22584821	820 ohm
R820	22570250	10 ohm, 1W, Metal Film
R822	22543823	82K ohm, 1/8W
R823	22584562	5.6K ohm
△ R901	22500201	1 ohm, 1/2W, Fusible
△ R902	22500166	1 ohm, 1/4W, Fusible
△ R903	22500201	1 ohm, 1/2W, Fusible
△ R904	22500166	1 ohm, 1/4W, Fusible
R905, 906	22584471	470 ohm
R991	22584182	1.8K ohm
ACCESSORIES		
AC01	22904455	Owner's Manual (TA)
AC01	22904456	Owner's Manual (TC)
AC01	22904688	Owner's Manual (TE) (German)
AC01	22904689	Owner's Manual (TE) (French)
AC01	22904690	Owner's Manual (TE) (Italian)
AC01	22904691	Owner's Manual (TE) (Swedish)
AC01	22904458	Owner's Manual (TE, TU) (English)
AC01	22904756	Owner's Manual (VF)
AC02	22164775	Connector Cord, 2P, Output
AC03	22197006	Connector Cord, 5P, CD Player
AC04	22957439	Caution Sheet, UL (TA)

TOSHIBA CORPORATION

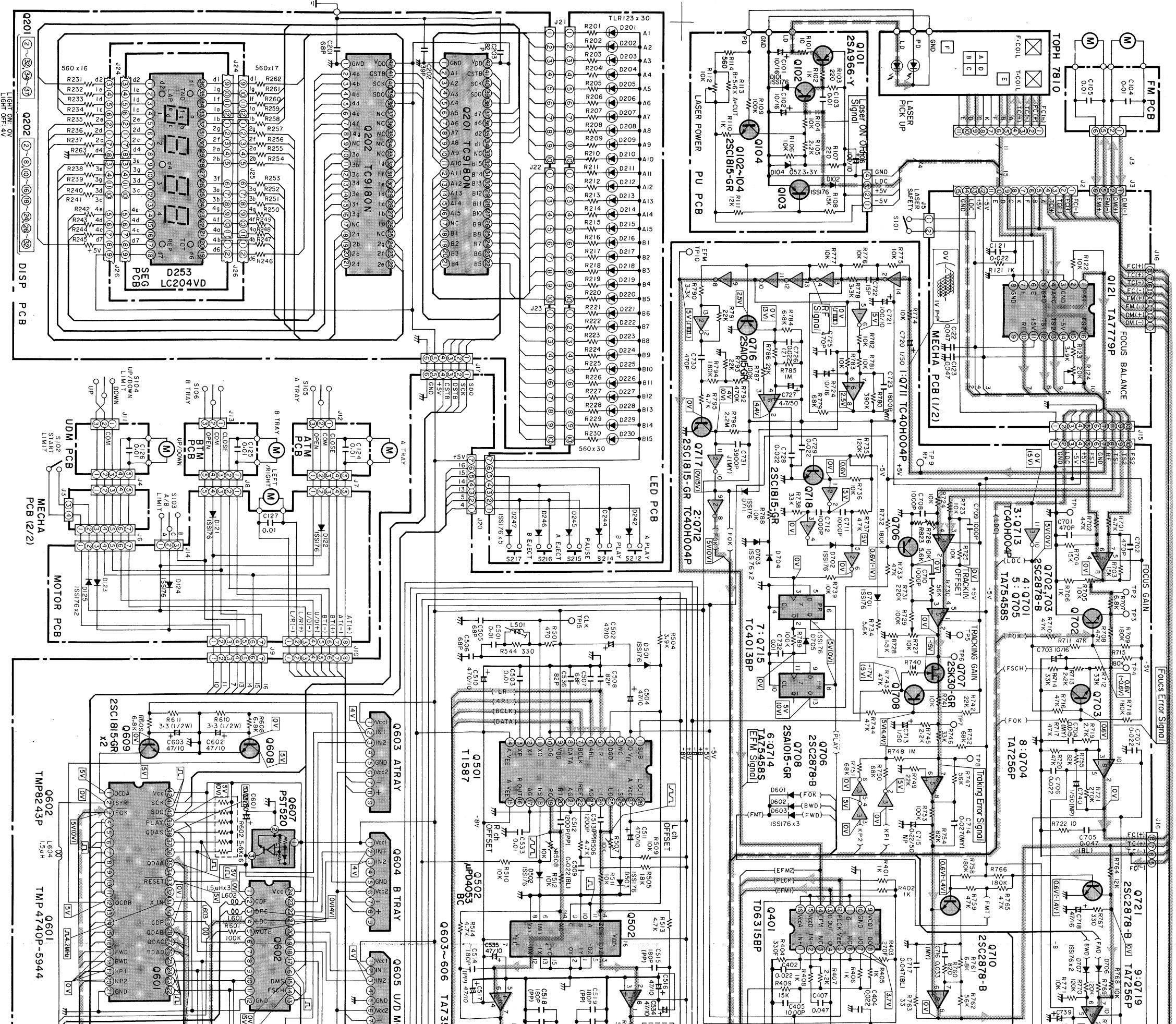
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105, JAPAN

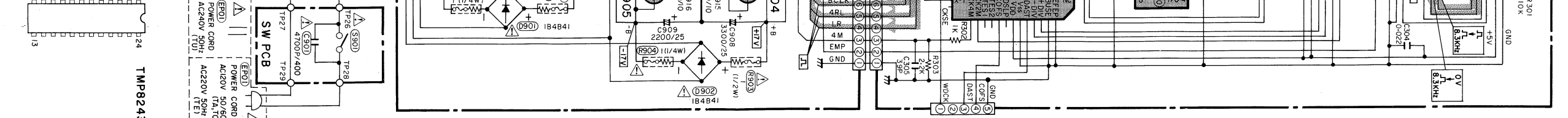
LED P.C. Board

Diagram showing the layout of an LED P.C. Board. The board is populated with numerous components, including resistors (R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230), capacitors (D246, D247), and integrated circuits (IC1, IC2, IC3, IC4, IC5, IC6, IC7, IC8, IC9, IC10, IC11, IC12, IC13, IC14, IC15, IC16, IC17, IC18, IC19, IC20, IC21, IC22, IC23, IC24, IC25, IC26, IC27, IC28, IC29, IC30, IC31, IC32, IC33, IC34, IC35, IC36, IC37, IC38, IC39, IC40, IC41, IC42, IC43, IC44, IC45, IC46, IC47, IC48, IC49, IC50, IC51, IC52, IC53, IC54, IC55, IC56, IC57, IC58, IC59, IC60, IC61, IC62, IC63, IC64, IC65, IC66, IC67, IC68, IC69, IC70, IC71, IC72, IC73, IC74, IC75, IC76, IC77, IC78, IC79, IC80, IC81, IC82, IC83, IC84, IC85, IC86, IC87, IC88, IC89, IC90, IC91, IC92, IC93, IC94, IC95, IC96, IC97, IC98, IC99, IC100). The board features several pin headers (A PLX, B PLX, C PLX, D PLX, E PLX, F PLX, G PLX, H PLX, I PLX, J PLX, K PLX, L PLX, M PLX, N PLX, O PLX, P PLX, Q PLX, R PLX, S PLX, T PLX, U PLX, V PLX, W PLX, X PLX, Y PLX, Z PLX) and a central connector (C1). The board is labeled with "LED P.C. Board" and "PAUSE".



SCHEMATIC DIAGRAM





components which
circuit or specified

NO. 171-2
XR-V22